

NETWORK MORPHOLOGY

Morphology is particularly challenging, because it is pervaded by irregularity and idiosyncrasy. This book is a study of word structure using a specific theoretical framework known as ‘Network Morphology’. It describes the systems of rules which determine the structure of words by construing irregularity as a matter of degree, using examples from a diverse range of languages and phenomena to illustrate. Many languages share common word-building strategies, and many diverge in interesting ways. These strategies can be understood by distinguishing different notions of ‘default’. The Network Morphology philosophy promotes the use of computational implementation to check theories. The accompanying website provides the computer-coded version of the Network Morphology model of word structure for readers to test, customize and develop. This book will be a valuable contribution to the fields of linguistic typology and morphology and will be welcomed by researchers and graduate students in these areas.

DUNSTAN BROWN is Senior Lecturer in Linguistics in the Surrey Morphology Group at the University of Surrey.

ANDREW HIPPISEY is Associate Professor of Linguistics in the Department of English at the University of Kentucky.

In this series

101. DONKA MINKOVA: *Alliteration and sound change in early English*
102. MARK C. BAKER: *Lexical categories: verbs, nouns and adjectives*
103. CARLOTA S. SMITH: *Modes of discourse: the local structure of texts*
104. ROCHELLE LIEBER: *Morphology and lexical semantics*
105. HOLGER DIESEL: *The acquisition of complex sentences*
106. SHARON INKELAS and CHERYL ZOLL: *Reduplication: doubling in morphology*
107. SUSAN EDWARDS: *Fluent aphasia*
108. BARBARA DANCYGIER and EVE SWEETSER: *Mental spaces in grammar: conditional constructions*
109. MATTHEW BAERMAN, DUNSTAN BROWN and GREVILLE G. CORBETT: *The syntax–morphology interface: a study of syncretism*
110. MARCUS TOMALIN: *Linguistics and the formal sciences: the origins of generative grammar*
111. SAMUEL D. EPSTEIN and T. DANIEL SEELY: *Derivations in minimalism*
112. PAUL DE LACY: *Markedness: reduction and preservation in phonology*
113. YEHUDA N. FALK: *Subjects and their properties*
114. P. H. MATTHEWS: *Syntactic relations: a critical survey*
115. MARK C. BAKER: *The syntax of agreement and concord*
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*

Earlier issues not listed are also available

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

*Network Morphology: A Defaults-based Theory
of Word Structure*

NETWORK MORPHOLOGY

A DEFAULTS-BASED THEORY
OF WORD STRUCTURE

DUNSTAN BROWN

University of Surrey

ANDREW HIPPISELY

University of Kentucky



CAMBRIDGE
UNIVERSITY PRESS

Cambridge University Press
978-1-107-00574-7 – Network Morphology
Dunstan Brown, Andrew Hippisley
Frontmatter
[More Information](#)

CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town,
Singapore, São Paulo, Delhi, Tokyo, Mexico City

Cambridge University Press
The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9781107005747

© Dunstan Brown and Andrew Hippisley 2012

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 2012

Printed in the United Kingdom at the University Press, Cambridge

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

Library of Congress Cataloguing in Publication data

Brown, Dunstan.

Network morphology : a defaults-based theory of word structure /
Dunstan Brown, Andrew Hippisley.

p. cm. – (Cambridge studies in linguistics ; 133)

Includes bibliographical references and indexes.

ISBN 978-1-107-00574-7

1. Grammar, Comparative and general–Morphology. 2. Grammar, Comparative and general–Word formation. I. Hippisley, Andrew. II. Title.

P241.B76 2012

415'.9–dc23 2011040522

ISBN 978-1-107-00574-7 Hardback

Additional resources for this publication at www.cambridge.org/Brown-Hippisley

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

Cambridge University Press
978-1-107-00574-7 – Network Morphology
Dunstan Brown , Andrew Hippisley
Frontmatter
[More Information](#)

For Rachel and Shirley

Contents

	<i>List of tables</i>	page xiii
	<i>List of figures</i>	xiv
	<i>Preface</i>	xv
	<i>Abbreviations and Russian transcription system used</i>	xviii
1	Options in constructing a morphological framework	1
1.0	Locating generalizations	1
1.0.1	Paradigmatic relations	4
1.0.2	Semi-regularity	5
1.0.3	Options and chapter outline	6
1.1	Object of inquiry: lexeme rather than morpheme	6
1.1.1	Radical agglutination	7
1.1.2	Morphemes and word syntax	10
1.1.3	Summary of object-of-inquiry option	12
1.2	Morphological domain: autonomous rather than part of a seamless web	13
1.2.1	Autonomous morphology and function/form dissociations	13
1.2.2	Seamless-web morphology and Distributed Morphology	19
1.2.3	Some challenges for Distributed Morphology's seamless web	25
1.2.4	Concluding autonomous over seamless-web morphology	29
1.3	Generalization as default inheritance	30
1.3.1	Default rather than mandatory inheritance	33
1.3.2	Multiple inheritance and orthogonality rather than single inheritance	35
1.3.3	Inflection versus derivation and submodularity	37
1.4	Morphological formalization	41
1.5	Summary of Network Morphology options and book outline	41
2	A framework for morphological defaults	44
2.0	Introduction	44
2.1	Models and analyses of lexemes	45
2.2	Lexemes as part of a network	51

x *Contents*

2.2.1	Inheritance relations	52
2.2.2	Hierarchy relations	54
2.2.3	Attribute ordering	57
2.2.4	Flexible paradigm signatures	64
2.2.5	Network relations	69
2.2.6	Morphology as a network	70
2.2.7	Local and global context	80
2.2.8	Evaluable paths	82
2.3	Defaults	83
2.3.1	Path extension and underspecification	84
2.3.2	Exceptional and normal case defaults	86
2.3.3	Defaults and productivity	106
2.4	The default relationship between syntax and morphology	107
2.4.1	Non-autonomy	107
2.4.2	Morphosyntactic feature slippages	108
2.4.3	Autonomous morphological features	109
2.5	Conclusion	110
3	Inflectional classes	111
3.0	Introduction	111
3.1	Inflectional classes within the wider typological space	113
3.1.1	Example 1: No morphological hierarchy required	118
3.1.2	Example 2: Morphological hierarchy required	122
3.1.3	Inheritance between the lexemic and morphological hierarchies	139
3.2	Justifying morphological hierarchies	145
3.3	Conclusion	149
4	Syncretism	151
4.0	Introduction	151
4.1	Definitions	152
4.2	Syncretism by default inference	156
4.3	Syncretism by referral	167
4.4	Case study for generalized referrals: Dalabon verbal morphology	170
4.4.1	The Dalabon paradigm without referrals	175
4.4.2	Relating prefixes and clitics	177
4.4.3	Adding referrals	178
4.4.4	Summary	180
4.5	Combining stem indexing and default inference	180
4.6	Conclusion	184
5	Morphological mismatch and extended deponency	186
5.0	Introduction	186

5.1	Extended deponency as defaults-based rule interaction	188
5.1.1	The hierarchical characterization of deponency	189
5.2	The Network Morphology account of Latin verb inflection	194
5.2.1	Non-regulars excluding deponents	199
5.3	Classical deponency	201
5.3.1	Mismatch, Property 1: overriding the first-order default	202
5.3.2	Lack of full participation, Property 2: overriding the second-order default	203
5.3.3	Semi-deponents, Property 3: overriding the second- and third-order defaults	205
5.3.4	'Form' defaults and defectiveness, Properties 4 and 5	208
5.4	Extended deponency and Archi nouns	209
5.4.1	The Network Morphology account of Archi nouns	209
5.4.2	Integrating deponent lexical entries	213
5.5	Is Latin deponency really morphological mismatch?	217
5.6	Concluding remarks	219
6	Defaults and paradigmatic restructuring: diachronic deponency	221
6.0	Introduction	221
6.1	Diachronic deponency as paradigmatic restructuring	222
6.2	Virtual paradigms and inheritance from the morphological hierarchy	226
6.3	The Network Morphology account of diachronic deponency	231
6.3.1	Activation of deponents	234
6.3.2	Passivation of deponents	238
6.4	Questions about virtual paradigms	243
6.4.1	Neo-deponents and virtual paradigms	244
6.4.2	Variation and virtual paradigms	245
6.4.3	Deponency in Greek	245
6.4.4	Before deponency	246
6.5	Concluding remarks	247
7	Derivation	249
7.0	Introduction	249
7.1	Derivation as lexeme-formation	251
7.2	Inheritance-based derivational relatedness	258
7.2.1	Conversion	262
7.2.2	Transposition	263
7.2.3	Category-preserving derivation	265
7.3	Resolving affix competition	269
7.3.1	Syntactic conditions	271
7.3.2	Formal conditions	272
7.3.3	Semantic conditions	275

xii	<i>Contents</i>	
7.4	Productivity	277
7.5	Concluding remarks on derivational morphology in Network Morphology	281
8	Conclusion	283
8.0	Taking stock	283
8.1	Autonomous morphology	283
8.2	Rules and defaults in morphology	285
8.3	Consequences	286
8.4	Importance of implementation for morphological theory	287
	<i>Notes</i>	289
	<i>References</i>	299
	<i>Index of languages</i>	314
	<i>Index of names</i>	316
	<i>Index of subjects</i>	319

Tables

4.1	Paradigm of Dalabon subject/object combinations	<i>page</i> 171
5.1	Deponency viewed as levels of default	193
5.2	Latin present indicative of verbs of the four conjugations	194

Figures

1.1	A morphological hierarchy for Russian nouns	page 31
1.2	The lexeme <i>zakon</i> ‘law’ inherits its morphology from Declension I	32
2.1	The lexeme <small>stol</small> ‘table’	48
2.2	The lexemic hierarchy with example lexical entry for the noun <i>stol</i> ‘table’	56
2.3	The lexical entry for the noun <i>stol</i> ‘table’ inherits inflectional information from an orthogonal source	70
2.4	A partial stress hierarchy for Russian	75
2.5	The hierarchy and network relations associated with Russian Declension I morphology and stress	79
3.1	A fragment of Kokota morphology	120
3.2	The lexemic hierarchy with unstructured inflectional classes	125
3.3	Morphological hierarchy for Russian (version 1)	126
3.4	The hierarchical structure of Russian declensional classes	135
3.5	Isomorphic hierarchies	146
4.1	Web of nominal categories and syncretism from a thirty-language sample	166
6.1	Paradigm linkage and Latin deponents	230
7.1	A base and its derivative in Network Morphology	249

Preface

The name Network Morphology denotes a way of conceptualizing a language's morphological system as the assemblage of facts gathered at nodes that are themselves linked together with other nodes all inhabiting the same network, as we will see in the following chapters. Network Morphology is also suggestive of the highly collaborative nature of this framework's origins and ongoing development. How this network of linguists and computational linguists took shape is the story behind the story of this book. On a day in February 1988 at the University of Sussex, Gerald Gazdar demonstrated to Grev Corbett the workings of DATR, a lexical knowledge representation language invented by Roger Evans and Gerald, which was later adopted as the formalism that underpins Network Morphology theories. Immediately Grev recognized DATR's expressiveness for describing distinctly morphological issues. The collaborative network had just begun to form, but what proved to be a crucial addition had to wait a further three years, when Grev met Norman Fraser, both a linguist and computational linguist with near native fluency in DATR. A series of DATR sessions yielded the first proto-Network Morphology paper which was read at the First International DATR conference in August 1991, and was on Russian nominal inflection. The theme of the paper was syncretism, one of several major areas of word structure which Network Morphology has been so extensively engaged in. Through this early work on Russian inflectional morphology, two other themes were to emerge: parsimonious representation of inflectional classes and gender assignment. An early paper on these topics is Corbett and Fraser (1993). Russian morphology seemed a good place to start to play with some of these ideas, and in September 1992 Dunstan Brown and Andrew Hippisley joined Grev and Norman as research fellows on two major grants, sponsored by the Economic and Social Research Council (ESRC) and Leverhulme Trust to develop a DATR-representation of fragments of Russian's inflectional and derivational systems. Alan Timberlake became involved to advise on morphophonological aspects; he also collaborated on one of the first morphophonological Network Morphology papers, Brown, Corbett,

xvi *Preface*

Fraser, Hippisley and Timberlake (1996). Soon after Dunstan and Andrew's arrival the name Network Morphology was given to the default inheritance and DATR-represented approach to word structure. The development of Network Morphology was supported by a further major grant from the ESRC in 1995, and the emergent framework started to yield analyses of other languages besides Russian such as Arapesh (Fraser and Corbett 1997), Polish (Brown 1998a) and Biniñ Gun-wok (Evans, Brown and Corbett 1998). It also brought in Nick Evans, Marianne Mithun and Greg Stump, consultants on the project and wonderful support ever since.

It is to the members of this network that we wish to express our gratitude, without whom the Network Morphology book would not have been possible. We would also like to thank the following for their careful reading of draft chapters, and whose insightful comments we have attempted to assimilate: Matthew Baerman, Patricia Cabredo Hofherr, Grev Corbett, Roger Evans and Greg Stump. Thanks are also due to Andrew Spencer for discussion of clitics and edge features, among many other things. We owe an intellectual debt to the champions of the lexeme-based approach to morphology, which Network Morphology unswervingly takes: Mark Aronoff, Stephen Anderson, Peter Matthews, Gregory Stump and Arnold Zwicky. We would like to thank the Cambridge Studies in Linguistics series editorial board both for their excellent comments and for their encouragement for the project; these have unquestionably improved the final product. For material support we would like to thank the ESRC (R000233633) and the Leverhulme Trust (F.242M) for bringing us to Grev and Norman, and for bringing us together, the ESRC (R000236063) for supporting the development of the theory, the British Council and German Academic Exchange Service (DAAD) for supporting work on Russian verbal morphology, the British Council and Research Council of Norway who supported work on case exceptions in Russian, and the ESRC (R000237939) for supporting work on syncretism, which brought Matthew Baerman into the Network Morphology enterprise. The ESRC also supported projects on paradigms in use (RES-000-23-0082), deponency (RES-000-23-0375) and periphrasis (RES-062-23-0696) from which elements of the book have benefited. The Arts and Humanities Research Council is to be thanked for supporting projects on defectiveness (AH/D001579/1) and on languages of the Bougainville region (B/RG/AN4375/APN19365) on which Bill Palmer was the researcher. We thank Bill for answering our questions on Kokota during the writing of this monograph. The European Research Council is to be thanked for providing funding for the project on morphological complexity (ERC-2008-AdG-230268 MORPHOLOGY) during which part of the research

for the book was carried out. We are grateful to the University of Kentucky's College of Arts & Sciences for a summer fellowship to employ our excellent proof reader, Amanda Barie, and to support Andrew Hippisley's visit to Surrey in May 2010. Thanks go to Penny Everson and Claire Turner for further editorial assistance. For their help with seeing the book through to publication we would like to thank Andrew Winnard and colleagues at Cambridge University Press, Sarah Green, Tom O'Reilly, and Kay McKechnie for copy-editing. We would also like to express our gratitude to Marina Chumakina for discussion of Archi-related issues. She and Alexander Krasovitsky also helped us with judgments on Russian-related matters, and Magda Fiałkowska is to be thanked for her intuitions on some of the Polish examples.

Brown is responsible for the writing of Chapters 2, 3, 4 and 8 and Hippisley for the writing of Chapters 1, 5, 6 and 7, but the ideas presented throughout the book and the theoretical underpinnings they share result from our joint thinking on these topics. Some chapters are developments from earlier published work. Much of Chapter 2 is new, but it draws on work from Brown (1998a, b), Brown's contribution to Evans, Brown and Corbett (2002) and Brown (2007). Chapter 3 draws in part on work carried out in Brown (1998b), but the presentation is new and the theoretical basis substantively revised in the light of recent developments. Sections of Chapter 4 are based on parts of Brown's contribution to Baerman, Brown and Corbett (2005), particularly the discussion of Dalabon and Dhaasanac. Parts of Chapter 5 were first published as Hippisley (2007), parts of Chapter 6 as Hippisley (2010a, b), and the ideas presented in Chapter 7 originate in Hippisley (1997, 1998, 2001). A full bibliography of Network Morphology style analyses can be found at www2.surrey.ac.uk/english/research/smg/webresources/network_morphology_bibliography.htm

Full Network Morphology theories of the various morphological analyses presented in the following chapters can be downloaded and tested using the book's accompanying website www.cambridge.org/Brown-Hippisley

Our final and deepest acknowledgement is to our wives, Rachel Hippisley and Shirley Kennedy. Thank you for your tireless, unending support.

Abbreviations and Russian transcription system used

1. Abbreviations

1	first person
2	second person
3	third person
A	agent
ABL	ablative
ABS	absolute
ACC	accusative
ACT	active
ADIT	aditive
ADJ	adjective
ADV	adverb
AGR	agreement
ALL	allative
AN	animate
ANTIP	antipassive
APPL	applicative
ART	article
AUG	augmentative
AUX	auxiliary
BEN	benefactive
CAUS	causative
CISLOC	cislocative
COMP	complementizer
COMPAR	comparative degree
CONPOSS	consumable possession
CONT	continutive
COP	copula

Abbreviations and Russian transcription xix

DAT	dative
DEF	definite
DEM	demonstrative
DES	designative
DIS	disharmonic
DU	dual
EP	epenthetic
ERG	ergative
EXCL	exclusive
EXPR	expressive
F	feminine
(F)	inherent feminine
FUT	future
GEN	genitive
GENPOSS	general possession
IMP	imperative
IMPF	imperfect
INAN	inanimate
INCL	inclusive
INDF	indefinite
INF	infinitive
INS	instrumental
INTENS	intensifier
INTR	intransitive
IPFV	imperfective
LOC	locative
M	masculine
MEDIOPASS	mediopassive
N	neuter
(N)	inherent neuter
NARR	narrative
NEG	negation
NMLZ	nominalizer, nominalization
NMP	non-masculine-personal
NOM	nominative
NUM	number
OBJ	object
OBL	oblique
P	patient

xx *Abbreviations and Russian transcription*

PASS	passive
PAUC	paucal
PER	person
PERS	personal
PIE	Proto-Indo-European
PF	perfect
PFV	perfective
PL	plural
POSS	possessive
PPLE	participle
PRED	predicative
PRF	perfect
PREP	prepositional case (Russian)
PRO	pronoun
PRS	present
PST	Past
PTCP	participle
REFL	reflexive
SBJ	subject
SBJV	subjunctive
SG	singular
ST	stative
SUFF	suffix
TAM	tense, aspect, mood
THEME	theme vowel
TRANS	translative
TR	transitive
VOC	vocative

2. Russian transcription

Many of our language examples are taken from Russian; it is therefore important to be clear on the transcription standard that we adopt, which differs significantly from the transliteration used in many expositions of Russian linguistics. We are grateful to Alan Timberlake for his guidance on this issue in the early years of the Network Morphology enterprise. What follows is based on our discussions with Alan and his comments published in Timberlake (1993: 828–32; 2004: ch. 2).

Consonants

In Russian the set of paired palatalized (soft) and unpalatalized (hard) consonants are distinguished by the diacritic ' (acute) which marks the soft member of the pair. For example in the minimal pair *l'uk* 'hatchway' and *luk* 'onion' the first example is in the soft consonant. The diacritic is used for phonemic contrast.

However, Russian has a rule of palatalization before /e/:

- (1) $C \rightarrow C'$ before /e/ (where C is not an affricate or palatoalveolar).

Any C palatalized by this rule is not marked with a diacritic. For example, *zakon* 'law' has prepositional singular in /e/, which is transcribed as *zakone*.

Russian has another rule that palatalizes all velars occurring before the high front vowel /i/.

- (2) $K \rightarrow K'$ before /i/ (where K is a velar).

The velars /k/, /g/ and /x/ are hard unless they feed the rule in (2). Softened velars are therefore *not* transcribed with the diacritic '. For example the noun *ručka* 'handle' forms its genitive singular with the exponent /i/, transcribed as *ručki* with no diacritic.

Finally, the glide /j/, a soft consonant with no hard counterpart, is never marked with the acute; and the unvoiced alveopalatal affricate /č/, also soft without hard counterpart, is always (redundantly) transcribed with the acute. Consonants preceding the glide /j/ assimilate in softening automatically, and so they do not carry the diacritic in this context.

Vowels

Russian has five vowel phonemes, if we ignore reduced vowels not under stress. These are /a/, /e/, /i/, /o/ and /u/, and are transcribed as such. The /i/ phoneme has the centralized allophone /ɨ/ which is standardly transliterated as *y*, as in *Bratja Karamazovy* 'The Brothers Karamazov'. Centralization is due to the rule in (3).

- (3) [i] → [ɨ] after a hard consonant.

The /i/ is used for the non-centralized allophone as the basic alternant. No symbol is made available for the centralized allophone, since it would be redundant due to (3). The acute used to denote soft consonants implies the [i] allophone, and lack of acute the [ɨ]. So *sir* 'cheese' is with [ɨ] but *s'irij* 'orphaned' is sequentially with [i] and [ɨ]. In transliteration the two words would be respectively *syr* and *siryj*.

xxii *Abbreviations and Russian transcription*

Examples

Cyrillic	Gloss	Transliteration	Transcription	Rationale
играть	'play'	igrat´	igrat´	[i] is default for /i/
книги	'books'	knigi	kn´igi	/n´/ underlyingly soft; rule (2) applies to /g/
комнате	'room' (prep sg)	komnate	komnate	rule (1)
лиса	'fox'	lisa	l´isa	first C underlyingly soft
пью	'drink' (first sg)	p´ju	p´ju	/j/ indicated by ь grapheme in Cyrillic; preceding C underlyingly soft, e.g. infinitive p´it´
сыграть	'play' (perf)	sygrat´	sigrat´	rule (3)

Example sentences taken from works of literature, or other standard sources, are transliterated rather than transcribed. So (4) is an extract from Leskov's *Zaxudalyj rod* 'A Family in Decline', used in Chapter 1.

- (4) knjažn-a reši-l-a ostavi-t´ mater-in dom
 princess(F)-SG decide-PST-SG.F leave-INF mother-ADJ.SG.M house
 'The princess decided to leave her mother's house'