Phonological Word and Grammatical Word

A Cross-Linguistic Typology

EDITED BY

Alexandra Y. Aikhenvald,
R. M. W. Dixon,
and Nathan M. White

Explorations in Linguistic Typology

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EXPLORATIONS IN LINGUISTIC TYPOLOGY

GENERAL EDITORS: Alexandra Y. Aikhenvald and R. M. W. Dixon
Language and Culture Research Centre, James Cook University

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A Cross-Linguistic Typology

Edited by
ALEXANDRA Y. AIKHENVALD,
R. M. W. DIXON, and NATHAN M. WHITE

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Preface

'Word' is a cornerstone for the understanding of every language. It is a pronounceable phonological unit. It will also have a meaning, and a grammatical characterization—a morphological structure and a syntactic function. And it will be an entry in a dictionary and an orthographic item. 'Word' has 'psychological reality' for speakers, enabling them to talk about the meaning of a word, its appropriateness for use in a certain social context, and so on. This volume is about 'word' in its many guises. It is a logical progression from our earlier volume *Word: A Cross-linguistic Typology*, edited by R. M. W. Dixon and Alexandra Y. Aikhenvald (Cambridge: Cambridge University Press, 2002), incorporating new facts, new insights, and new generalizations.

The volume starts with a typological introduction summarizing the main issues to do with 'word', with special focus on phonological and grammatical word and on their interactions. It is followed by revised versions of papers presented at the International Workshop ' "Word": its manifestations and functions' organized by the editors and held at the Language and Culture Research Centre, James Cook University, 3–4 October 2018. An earlier version of Chapter 1 was circulated to the contributors, with a list of issues to be addressed, so as to ensure that the studies of individual languages within this volume were cast in terms of a common set of parameters. This is the tenth monograph in the series *Explorations in Linguistic Typology,* devoted to volumes from International Workshops organized by the Language and Culture Research Centre and its predecessors.

The Workshop and subsequent discussions between the editors and the authors were intellectually stimulating, with cross-fertilization of ideas and scholarly debate. Each author has undertaken intensive fieldwork and has firsthand in-depth knowledge of their languages, in addition to experience of working on linguistic typology, historical and comparative linguistics, and language contact and areal diffusion. The analysis is uniformly cast in terms of basic linguistic theory—the cumulative typological framework which provides the foundation for sound empirically-based descriptive and analytic works. We avoid formalisms (which provide restatements rather than explanations, and come and go with such frequency that any statement made in terms of them is likely to soon become inaccessible).

It is our hope that this volume will further contribute to a consolidated conceptual and analytic framework, primarily established in our 2002 volume on 'Word'. Our aim is to cover, and explain, the newly established parameters of variation, opening new perspectives on how the unit 'word' can be defined.

We are grateful to all the participants in the Workshop and colleagues who took part in the discussion, providing feedback on presentations, particularly Firew Girma

Notes on the contributors

Alexandra Y. Aikhenvald is Distinguished Professor, Australian Laureate Fellow, and Director of the Language and Culture Research Centre at James Cook University. She is a major authority on languages of the Arawak family, from northern Amazonia, and has written grammars of Bare (1995) and Warekena (1998), plus *A Grammar of Tariana, from Northwest Amazonia* (CUP, 2003), and *The Manambu Language of East Sepik, Papua New Guinea* (OUP 2008) in addition to essays on various typological and areal topics. She is the editor of *The Oxford Handbook of Evidentiality* (OUP 2018) and co-editor, with R. M. W. Dixon, of *The Cambridge Handbook of Linguistic Typology* (CUP 2017). Her other major publications include *Classifiers: A Typology of Noun Categorization Devices* (OUP 2000), *Evidentiality* (OUP 2004), *Imperatives and Commands* (OUP 2010), *Languages of the Amazon* (OUP 2012), *The Art of Grammar* (OUP 2014), *How Gender Shapes the World* (OUP 2016) and *Serial Verbs* (OUP 2018). *Address:* Language and Culture Research Centre, James Cook University, PO Box 6811, Cairns, N Qld 4780, Australia; *e-mail:* alexandra.aikhenvald@jcu.edu.au

Sean Allison is Associate Professor of Linguistics at the Canada Institute of Linguistics of Trinity Western University (TWU) in Langley, British Columbia, Canada. He serves as the MA in Linguistics program director, as well as teaching French Linguistics and French Language and Culture courses at TWU. He has carried out extensive field research on the Kotoko languages, focusing particularly on the Makary Kotoko language. He received his PhD from the University of Colorado at Boulder in 2012, with a dissertation on aspects of the grammar of Makary Kotoko. His writings have addressed a number of issues in the language including: borrowings, diffusion, linguistic evidence of Islamization, and conditional constructions, as well as language development work for different Kotoko languages. *A Grammar of Makary Kotoko* was published in 2020 by Brill (Leiden). *Address:* Trinity Western University, CanIL, 7600 Glover Road, Langley, BC, Canada, V2Y 1Y1; *e-mail:* sean.allison@twu.ca

Luca Ciucci is Postdoctoral Research Fellow at the Language and Culture Research Centre (James Cook University) in Cairns. In 2007, he began his research on the Zamucoan languages (Ayoreo, Chamacoco, and †Old Zamuco). During his PhD years, he discovered the earliest grammar of Ecuadorian Quechua. In 2013, he completed his PhD at Scuola Normale Superiore in Pisa. His monograph *Inflectional Morphology in the Zamucoan Languages* (CEADUC 2016) is considered the most detailed morphological description of a small language cluster from South America. His research activities include the grammatical description of Ayoreo and Chamacoco, the reconstruction of Proto-Zamucoan, and the analysis of the historical data available for †Old Zamuco. In 2017, he began documenting Chiquitano (also known as Bésɨro), an isolate. He is particularly interested in language contact between Chiquitano and the surrounding languages (such as Zamucoan), and in the comparison between the different Chiquitano varieties spoken nowadays, plus the historical documents available on this language. *Address:* Language and Culture Research Centre, James Cook University, PO Box 6811, Cairns, N Qld 4780, Australia; *e-mail:* luca.ciucci@jcu.edu.au

R. M. W. Dixon is Adjunct Professor and Deputy Director of the Language and Culture Research Centre at James Cook University. He has published grammars of a number of Australian languages (including Dyirbal and Yidiñ), in addition to *Edible Gender, Mother-in-Law Style and Other Grammatical Wonders* (OUP 2015), *A Grammar of Boumaa Fijian* (University of Chicago Press 1988), *The Jarawara Language of Southern Amazonia* (OUP 2004, paperback 2011), *A Semantic Approach to English Grammar* (OUP 2005), *Making New Words: Morphological Derivation in English* (OUP 2014). His works on typological theory include *Where Have All the Adjectives Gone? And Other Essays in Semantics and Syntax* (Mouton 1982) and *Ergativity* (CUP 1994). *The Rise and Fall of Languages* (CUP 1997) expounded a punctuated equilibrium model for language development; this is the basis for his detailed case study *Australian Languages: Their Nature and Development* (CUP 2002). He is also the author of the three-volume work *Basic Linguistic Theory* (OUP 2010–12) and of an academic autobiography *I am a Linguist* (Brill 2011). His two recent controversial studies are *Are Some Languages Better Than Others?* (OUP 2016, paperback 2018) and *The Unmasking of English Dictionaries* (OUP 2018). *Address:* Language and Culture Research Centre, D3, James Cook University, PO Box 6811, Cairns, N Qld 4780, Australia; *e-mail:* robert.dixon@jcu.edu.au

N. J. Enfield is Professor of Linguistics at the University of Sydney and Director of the Sydney Centre for Language Research. His research on language, culture, and cognition, from both micro and macro perspectives, is based on extended field work in mainland Southeast Asia, especially Laos. His books include *Mainland Southeast Asian Languages: A Concise Typological Introduction* (CUP 2019), *The Concept of Action* (with Jack Sidnell, CUP 2017), *How We Talk* (Basic Books 2017), *The Utility of Meaning* (OUP 2015), *Natural Causes of Language* (Language Science Press 2014), and *A Grammar of Lao* (Mouton 2007). Address: Department of Linguistics, University of Sydney, NSW, 2006, Australia; *e-mail*: nick.enfield@sydney.edu.au

Nerida Jarkey is Associate Professor in Japanese Studies at the University of Sydney. She has a particular interest in the semantics of grammar, with a focus on multi-verb constructions and on transitivity in Japanese and White Hmong. She also works on the expression of subjectivity and identity in Japanese. Nerida is the author of *Serial Verbs in White Hmong* (Brill 2015) and is Editor for Language and Socio-Linguistics for the journal *Japanese Studies*. *Address*: School of Languages and Cultures (A18), University of Sydney, NSW, 2006, Australia; *e-mail*: nerida.jarkey@sydney.edu.au

Nathan M. White is a PhD student at the Language and Culture Research Centre at James Cook University. He read Intercultural Studies at Biola University and completed an MA in Linguistics at Trinity Western University in 2014. His research interests include language typology, language documentation and revitalization, phonology of tone languages, East and Southeast Asian languages, Semitic languages, and indigenous languages of California. The topic of his PhD thesis is 'The Hmong Language of North Queensland'. *Address:* Language and Culture Research Centre, James Cook University, PO Box 6811, Cairns, N Qld 4780, Australia; *e-mail:* nathan.white1@my.jcu.edu.au

Katarzyna (Kasia) I. Wojtylak received her PhD in December 2017 from James Cook University, with her thesis 'A reference grammar of Murui (Bue), a Witotoan language spoken

in Northwest Amazonia', awarded 'summa cum laude' (published in 2020 by Brill, Leiden). She is currently Teaching and Research Fellow at the University of Regensburg, Germany. Her research interests cover Amazonian languages. She has a strong background in linguistic description, language documentation, linguistic typology, and ethnographic research. Since 2010, she has been working with several indigenous groups from Northwest Amazonia (Murui, Mɨka, Mɨnɨka), focusing on various aspects of their language and culture (such as literature, language contact, and social organization). *Address:* Lehrstuhl für Allgemeine und Vergleichende Sprachwissenschaft, Fakultät für Sprach-, Literatur- und Kulturwissenschaften, Universität Regensburg, Germany; *e-mail:* katarzyna.wojtylak@jcu.edu.au

Abbreviations and conventions

-	affix boundary
#	boundary between phonological words within a grammatical word
=	clitic boundary
+	boundary between grammatical words within a phonological word
'	primary stress
ˌ	secondary stress
.	syllable break; mora break in Chapter 3
:	vowel lengthening
1	1st person
2	2nd person
3	3rd person
A	transitive subject
ABL	ablative
ACC	accusative
ACHV	achievement
ACT	active
ADJ	adjective
ADP	adposition
ADV	adverb
AF	argument form
AG	agentive
ALL	allative
AM	aspect and modality
ANA	anaphoric
ANDTV	andative
ANIM	animate
ANT	anterior
AOR	aorist
APASS	antipassive
APPLIC	applicative
APPR	apprehensive

ART	article
ASP	aspect
ASSOC	associative
ASSUM	assumed
AT	postposition 'at'
ATEL	atelic
ATT	attainment
ATTRIB	attributive
AUDIT	auditory
AUG	augmentative
AUX	auxiliary
B	bare (level of politeness in person reference)
BEN	benefactive
C	consonant
CAUS	causative
CC	copula complement
CERT	certainty
CFM	clause-final marker
CL	classifier
CL.REP	classifier-repeater
CLF	classifier
CLIT	clitic
CM	change of state marker
CMPL	complementizer
COLL	collective
COMIT	comitative
COMP	complement clause
COMPAR	comparative
COMPL	completive
CONC	concrete
COND	conditional
CONJ	conjunction
CONN	connective
CONT	continuous
CONTR	contrary

CONVB	converb
COP	copula
CS	copula subject
CT	class term
CTS	close to speaker
CVT	consonant-vowel-tone
D	possessed
DAT	dative
DEC	declarative
DEF	definite
DEM	demonstrative
DEP	dependent
DESID	desiderative
DIM	diminutive
DIR	directional
DIST	distal
DM	discourse marker
DR	'derivational' classifier
DS	different subject
du, DU	dual
DUR	durative
E	extension to core
EAM	extended argument marker
EMPH	emphasis
EPENT	epenthesis
EPITH	epithesis
EPST	epistemicity
ERG	ergative
ESS	essive
EUPH	euphonic syllable
EVENT.NOMZ	event nominalizer
EVID	evidential
exc	exclusive
EXIST	existential
FAC	factive

F	falling tone
FEM, F, f	feminine
FIN	finite
FOC	focus
FRUST	frustrative
FSH	far from speaker and hearer
FUT	future
GEN	genitive
GENL	general
GF	generic form
gpl	greater plural
GR	group
H	high tone
HAB	habitual
HL	highlighting
HON	honorific
HUM	humble (Chapter 3), human (Chapter 7)
HUMN	human
HYPOTH	hypothetical
IDEO	ideophone
IF	indeterminate form
IMMED	immediate
IMMED.PAST	immediate past
IMP	imperative
IMPER	imperfect
IMPERS	impersonal
IMPERV	imperfective
INAN	inanimate
inc	inclusive
INCH	inchoative
INCOM	incompletive
INDEF	indefinite
INDEP	independent
INDIC	indicative
INFER	inferred

INFIN	infinitive
INST	instrumental
INT	intentional
INTENS	intensifier
INTER	interrogative
INTERJ	interjection
INTR	intransitive
INV	inverse
IP	illocutionary particle
IRR	irrealis
IRLS	irrealis
ITER	iterative
L	low tone
LINK	linker
LOC	locative
LOCAL	location marker
LOCL	localizer
M	mid tone
M/F	epicene
MASC, M, m	masculine
MOD	modifier, non-noun modification marker (Chapter 9)
N	noun
N.S/A	non-S/A subject
NCL	noun class
NEG	negation
NEUT, N, n	neuter
NEUTR	neutral aspect
NEWS	news giving
NFIN	non-finite
NFUT	non-future
NMOD	noun modification marker
NOM	nominative
NOMZ	nominaliser
NON.NOM	non-nominative
NONPROX	non-proximal

NP	noun phrase
NPAST	non-past
nsg, NSG	non-singular
NSP	non-specific
NUMB	number
O	transitive object
O$_1$	primary object
O$_2$	secondary object
OBJ	object
OBL	oblique
OPT	optative
ORD	ordinal number
PA	plural/abstract
PART	particle
PARTIC	participle
PASS	passive
PAUC	paucal
PE	plural exclusive
PEJ	pejorative
PER	perfect
PERI	peripheral
PERV	perfective
PF	predicative form
pi	plural inclusive
PIV	pivot
pl, PL	plural
PLUPERF	pluperfect
PN	pronoun
POL	polar question marker
POL	polite (Chapter 3, Chapter 7)
POSS	possessive
POSTP	postposition
PP	prepositional phrase
PR	'pronominal' classifier
PRED	predicate

PREF	prefix
PREP	preposition
PRES	present
PREVB	preverb
PRF	perfect
PRIV	privative
PRO	non-human/locative pronoun
PROG	progressive
PROHIB	prohibitive
PROSP	prospective
PROX	proximal
PRPL	proparalepsis
PURP	purposive
Q	polar question marker, content question word
QPLR	polar question
QUANT	quantifier
QUOT	quotative
R	possessor
RC	relative clause
REAL	realis
REC	recent
RECIP	reciprocal
RECP	associative-reciprocal marker
RED	reduplication
RED:COH	cohering reduplication
REDUP	reduplicated
REFL	reflexive
REIT	reiterative
REL	relative clause marker
REM	remote
REP	reported
RES	resultative
RETR	retrospective
RM	relative clause marker
S	intransitive subject

S/A.TOP	S/A topical marker
S$_a$	'active' S, marked like A
SEMB	semblative
SEQ	sequential
sfp	sentence final particle
sg, SG	singular
SIM	simultaneous
SMLF	semelfactive
S$_o$	'stative' S, marked like O
sp	Spanish
SP	specific
sp.	species
SS	same subject
SS:COMPL	same subject completive
SS:SEQ	same subject sequential
SS:SIM	same subject simultaneous
STAT	stative
SU	subject
SUB	subordinator
SUBJ	subjunctive
SUBORD	subordinate
SUF	suffix
SUPER	superlative
SVC	serial verb construction
T	tone
TAG	tag question marker
TAM	tense-aspect-mood
TAME	tense-aspect-modality-evidentiality
TEL	telic
TH	thematic
TLINK	topic linker
TOP	topic
TPC	topic
TR	transitive
UNCERT	uncertainty

v	vowel
vcc	verbless clause complement
vcs	verbless clause subject
voc	vocative
vol	volitional
vp	verb phrase

1

The essence of 'word'

ALEXANDRA Y. AIKHENVALD, R. M. W. DIXON,
AND NATHAN M. WHITE

1 Setting the scene

'Word' is a pivot for every language, providing a bridge between grammar and phonology. Any word, from dictionary or discourse, will have a meaning. It will also have a grammatical characterization—a morphological structure and a syntactic function. And it will also have a phonological characterization—a phonotactic make-up determining its boundaries, its length, and its other properties as a pronounceable unit.

Numerous linguists have assumed that 'word' is a—or 'the'—basic unit of language and of linguistic analysis (a brief history of the notion of word throughout the recent history of linguistics and its treatment is in Dixon and Aikhenvald 2002a: 1–10). The notion of 'word' covers a number of interrelated concepts. A 'phonological word' as a minimally pronounceable unit is recognized on phonological criteria. A 'grammatical word' is recognized on exclusively grammatical—morphological and syntactic—principles. The study of words and word classes in Yokuts, by Newman (1967: 182–3), begins with lists of phonological and grammatical features of 'words', with an explicit statement that 'morphological criteria serve to supplement the phonological features for delimiting the unit "word"'. In the majority of instances, grammatical and phonological criteria come together to create 'word'.

As Dixon (2010b: 2) put it, 'recent work has shown that the best practice is not to try to combine criteria of different types, but to apply them separately and then compare the results'—that is '(a) recognize "phonological word", determined entirely on phonological principles, (b) recognize "grammatical word", determined on exclusively grammatical (that is, morphological and syntactic) principles, (c) compare the two units'. In most instances, they will coincide. What Matthews (2002: 275) refers to as 'combined criteria from both grammar and phonology' will work together. In just a minority of instances, one grammatical word will consist of more than one

phonological word and/or the other way around. It is incumbent on a grammar analyst to bring forth the features of 'word' as a phonological and as a grammatical unit (as pointed out in some detail in the recent guide to writing informed grammars, Aikhenvald 2015: 73–4, and further discussion in Dixon 2010b: 7–12 and Dixon and Aikhenvald 2002a, b). Missing out 'word' in any of its senses creates a deficiency both in guides to students (for instance, Payne 2006 bypasses the notion of word altogether, while Blake 2008 makes just a fleeting mention of 'word' as a dictionary entry).

'Word' in its phonological sense features in a hierarchy of phonological units, established on phonological criteria:

(1)   phoneme (> mora) > syllable (> foot) > phonological word > intonation group

Note that it is useful to recognize units 'mora' and 'foot' for some, but not for all, languages. Moraicity plays a role in determining restrictions on the minimal length of a phonological word—as we will see in §2. In Japanese, mora, rather than syllable, is the most salient unit (§2.2.1 of Chapter 3, this volume). Its reality is particularly evident in songs, in traditional poetry, and in language games. In contrast, some language games in Makary Kotoko (§7 of Chapter 9) involve syllables. The next level, in Japanese, is 'foot' (canonically consisting of two moras, rather than two syllables): its reality is evidenced by a number of morphophonological processes, including truncation of loan words and hypocoristic formations with the suffix *-chan* expressing 'affection and endearment' (examples are in §2.2.3 of Chapter 3).

'Grammatical word' features in a hierarchy of grammatical units, established on grammatical criteria:

(2)   morpheme > grammatical word > phrase > clause > sentence

Grammatical word is the target for syntactic operations. Functions within a clause and a sentence are defined in terms of grammatical words and their roles in the overall argument structure. Grammatical words may combine to form special idiomatic collocations (which can be treated as single dictionary entries: we return to this in §3.2).

Some types of grammatical words—coextensive with phonological words—can freely function as complete utterances. One-word utterances in Japanese (§5 of Chapter 3) are a feature of very informal speech, with the exception of words in the inflecting word classes of verbs and adjectives which often occur as complete utterances on their own, even in polite and formal contexts. To be able to occur as an independent utterance in Lao, a unit has to have a stressed syllable, and thus constitute a phonological word. Most enclitics in the language do not have this capacity (§4 of Chapter 7). Just about any word can form a whole sentence in Makary Kotoko (§6 of Chapter 9).

Different sets of criteria may turn out to be relevant for delineating the properties and the extent of a phonological word, and those of a grammatical word, in a given

language. As Bazell (1953: 67–8) put it, 'criteria may be found which are either neces-
sary, or sufficient, but not both'. The relative importance and weighting of criteria will
vary from one language to the next. The Appendix to this chapter contains a checklist
of points relevant for fieldworkers investigating phonological and grammatical word
in different languages.

We now turn to typical properties determining the kinds of 'word'.

2 Recognizing phonological and grammatical word: typical criteria

A PHONOLOGICAL WORD is a phonological unit larger than the foot or syllable (in
some languages it may minimally be just one syllable) which has at least one (and
generally more than one) phonological defining property chosen from the following
areas:

(a) *Segmental features*—these include internal syllabic/moraic and segmental struc-
ture; phonetic realizations in terms of this; word boundary phenomena; and also
pauses.

For instance, in Manambu, a Ndu language related to Yalaku (Chapter 6 of this
volume), the labio-dental fricative *v* appears only word-initially and is thus a token of a
word-initial position, serving a delimitative function (in the sense of Trubetzkoy 1939).
A phonological word cannot contain more than one long vowel (Aikhenvald 2008:
51). In Manambu, as in Chamacoco (§2.1 of Chapter 4), unreleased stops occur only
word-finally. A phonological word in Chamacoco cannot begin with a rhotic or a
voiceless liquid, and sequences of identical consonants are restricted to the word-
internal position (§2.2 and §2.4 of Chapter 4). Vowel lengthening in Murui is the
token of the start of a phonological word (§2 of Chapter 5).

Several segmental features serve a word-delimiting function in Yalaku: these
include the restriction of the glottal fricative *h* to just the word-initial position and of
voiced stops and affricates to the word-medial position, weakening and elision of
word final vowels, and lenition of the voiceless bilabial *p* (§3.2 of Chapter 6). In each
case, word-initial phenomena involve strengthening and fortition, and word-final
features tend to correlate with lenition and weakening. A comprehensive typology
of word-initial, word-internal, and word-final phenomena remains a topic for fur-
ther study.

The segmental composition and boundaries of a phonological word can be defined
in terms of types of moras or syllables. A phonological word in Japanese can end with
any mora type, except that a word break is not acceptable between the first and the
second moras of a geminate (§3.2 of Chapter 3). Syllables of CVC type in Yalaku,
produced as a result of word-final vowel deletion, are indicative of the word-final pos-
ition (§3.2 of Chapter 6).

Placement of a pause may be indicative of a phonological word: speakers may
pause between words but not within a word, as in Japanese (§3 of Chapter 3), Murui

(§3.4 of Chapter 5), Hmong (§2.2 of Chapter 8), and Makary Kotoko (§§3 and 8 of Chapter 9) (see also Dixon 2010b: 9).[1]

(b) *Prosodic features*—stress (or accent) and/or tone assignment; features such as nasalization, retroflexion, vowel harmony.

In many languages, a phonological word includes just one syllable with (primary) stress, and is recognized in part on this basis (also see Hildebrandt 2015). Primary stress is a major criterion for phonological word in Chamacoco, Murui, and Yalaku (§3.1 of Chapter 4, §2.2 of Chapter 5, and §3.1 of Chapter 6). The phonological word is the domain of the prosodic feature of pitch accent in Japanese, with no more than one change in pitch from high to low within a word (§3 of Chapter 3).

Lao has five tones and stress; a stressed syllable will be 'louder in volume, longer in duration, and more expanded in vowel space articulation than a non-stressed syllable'. Both stress and lexical tone are defining features of a phonological word (§3.4 of Chapter 7). In Makary Kotoko, tone assignment defines the boundaries of a phonological word (§3 of Chapter 9). In Hmong, a language with seven tones each assigned to a syllable, a phonological word is defined by the presence of pragmatic prominence on one syllable which shows 'longer duration, greater relative intensity and a broader pitch range' compared to other syllables. That a phonological word in Hmong is not co-extensive with a single syllable is demonstrated by the presence of prominence under a number of circumstances (§2.1 of Chapter 8).

A phonological word may include more than one stressed syllable. Their placement within the word is then significant for determining the word boundaries. An example comes from Yidiñ (§3 of Chapter 2), where stress falls on the first syllable of the word and every alternate syllable after that, if the word contains no long vowel; if there is a long vowel, stress goes on the first syllable with a long vowel, and every alternate syllable before and after that.

Processes of vowel harmony and of nasal harmony typically operate within a phonological word, as is the case in Chamacoco (§§3.2 and 3.3 of Chapter 4). Along similar lines, nasal assimilation is a property of a phonological word in numerous languages of the Vaupés Linguistic Area in Colombia and Brazil (including East Tukanoan languages, Tariana, an Arawak language, and also Hup and Yuhup,

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[1]   A number of the world's languages have special pre-pausal forms, that is, segmental features at the end of a phonological word preceding a pause. These may include vowel lengthening and lowering, as in a number of Semitic languages, such as Biblical Hebrew and Classical Arabic (see Gray 1971: 29, Steuernagel 1961; a summary in Aikhenvald 1996: 510–1), and in some Nilo-Saharan languages (Firew Girma Worku, p.c.). In Bare and Warekena of Xié, two North Arawak languages of the Upper Rio Negro, nasalized vowels signal the end of a word, before a pause. In addition, the insertion of a word-final *-hV* syllable at the end of a phonological word in Warekena of Xié indicates the presence of a pause (the vowel *V* assimilates to the final vowel of the phonological word prior to the insertion of the pause marker). The phenomenon of 'nasal pause' in South American languages was first identified by Rodrigues (1986, 2003) (further examples are in Aikhenvald 2012: 116; 1996: 503). Phonetic and phonological correlates of pauses as exponents of word-boundaries require further cross-linguistic investigation.

marginal members of the area: see Aikhenvald 2012: 113–15, and references there, in addition to a discussion of other languages from Amazonia).

(c) *Phonological rules*—some rules apply only within a phonological word (e.g. internal sandhi rules); others (external sandhi rules) apply specifically across a phonological word boundary.

In Yidiñ, the rules of penultimate lengthening and of final syllable deletion apply only within one phonological word, to satisfy the requirements of stress assignment (but not between different phonological words: §3 of Chapter 2). Similarly, various phonological rules of assimilation and segment omission in Jarawara, from the Arawá family in southern Amazonia, apply within a verb (§4 of Chapter 2). In Fijian, certain vowel sequences appear as diphthongs within a phonological word; they would be distinct syllables across a word boundary (§5 of Chapter 2). Voicing of stops and affricates in Yalaku is a feature of a word-internal position (§3.2 of Chapter 6). In some varieties of Japanese, the phonetic realization of the phoneme *g* depends on its position in the word (see §3.3 of Chapter 3). The rule of *rendaku* 'sequential voicing' of obstruents in Japanese occurs within a phonological word, not across word boundaries (§3.3 of Chapter 3).

Language-specific restrictions on the length of a minimal phonological word can be stated in terms of syllables or in terms of moras. In Manambu (Aikhenvald 2008: 51), a phonological word tends not to exceed three syllables in length. A minimal phonological word in Yalaku consists of a CV or a VC syllable (§3.2 of Chapter 6). In Jarawara, Fijian, and Murui, a phonological word has to include at least two moras (a monosyllabic word will have to contain a long vowel: §§4 and 5 of Chapter 2 and §2.1 of Chapter 5). Japanese displays a strong preference for a phonological word to consist of more than one mora, with the canonical word containing one or more canonical—bimoraic—feet (§3 of Chapter 3). A phonological word in Lao consists of at least one foot (§3.8 of Chapter 7). Restrictions on the preferred length of a phonological word come into play when a grammatical and a phonological word turn out not to be coextensive. We turn to this in §3.

A GRAMMATICAL WORD may have as its base one or more lexical roots to which morphological processes (compounding, reduplication, shift of stress, change of tone, internal change, subtraction, affixation) have applied. Each of these lexical-based words has a conventionalized coherence and meaning. Grammatical words may include non-lexical items such as pronouns, demonstratives, and articles, and also functional markers such as adpositions and conjunctions (see also Dixon 2010b: 12–19 and Dixon and Aikhenvald 2002b).

Furthermore, 'when a grammatical word involves compounding or affixation, its component grammatical elements…always occur together rather than scattered through the clause' (Dixon 2010b: 14). This is the essence of the criterion of 'cohesiveness'. The components generally occur in a fixed order. A few exceptions come from highly synthetic languages, mostly in Amazonia and Meso-America, which allow

variable morpheme ordering, as shown in Aikhenvald (2017), Beck (2008), McFarland (2009), Watters (2017), and also Ryan (2010); also see the discussion of Murui in §3.1 of Chapter 5. For languages where derivational and inflectional processes may be distinguished, there is a tendency for a word to contain just one inflectional affix per word (exceptions come from languages with multiple marking of agreement in gender and noun class). Generally speaking, morphological processes involved in the formation of a grammatical word tend to be non-recursive (with some exceptions coming from highly synthetic languages of Amazonia).

To identify the boundaries of a grammatical word one needs a good grasp of the grammar of a language. In Yidiñ, an Australian language, a lexical root commences a grammatical word, which is then continued by one or more optional derivational suffixes plus an obligatory choice from a nominal or verbal inflectional system (§3 of Chapter 2). Most grammatical words in Japanese are based on a lexical root that may have undergone morphological processes including compounding, reduplication and affixation (§4 of Chapter 3).

Verbal and nominal grammatical words tend to differ in terms of the inflectional and derivational markers they occur with, and their overall complexity. In Chamacoco, a synthetic language from the Zamucoan family, verbs have two prefix positions, and nouns have one (Table 4 and §4 of Chapter 4). Murui, a highly synthetic language from the Witotoan family, has seventeen suffix positions for a verb and just four for a noun (Schemes 1 and 2 in Chapter 5).[2] Distinguishing between roots and affixes, and between free and bound morphemes is essential for delineating the composition of a grammatical word and its boundaries. This task is relatively straightforward for synthetic languages.

What about languages of a highly analytic profile? Both Lao and Hmong have been classified as belonging to the 'isolating' type, with little in the way of bound morphology, and a 'morpheme-word ratio approaching one', similar to the majority of other languages of mainland Southeast Asia (Enfield 2017, 2019; §9 of Chapter 7). One might surmise that every morpheme equals a word. However, this is not quite so.

Unstressed class terms in Lao and Hmong (§5.2.1 of Chapter 7 and §3.4.1 of Chapter 8), a few quantifiers and the verbal associative-reciprocal prefix *sib-* in Hmong are closely bound to the root, forming one grammatical unit with it: they cannot be separated from the root nor used on their own. These facts underscore the relevance of the notion of 'grammatical word' in Lao and Hmong, as distinct from a phonological word as a minimal pronounceable unit. The presence of bound morphemes in both languages qualifies their treatment as purely isolating—casting doubt

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[2] The absence of clear differentiation between grammatical and phonological words and units of other levels has led Bickel and Zúñiga (2017) to a lack of clear statements concerning the definition of 'word' in what they refer to as 'polysynthetic languages'. No evidence has been produced so far in favour of any disparity between a 'prosodic' word (defined based on the placement of accent or tone) and a phonological word determined on the basis of segmental features.

on the linguistic reality of the 'isolating type' in morphological typology (cf. Payne 2017).

Phonological criteria can play a role in identifying word classes and corresponding grammatical words. In Makary Kotoko (§3 of Chapter 9), the occurrence of low toned syllabic nasals is restricted to the word-initial position for a small subset of nouns (see further examples in Aikhenvald 2015: 87). Phonological and grammatical features conspire in providing a holistic view of a 'word'—whose phonological and grammatical boundaries are coextensive. We now turn to the few instances where they are not coextensive.

3 When a phonological and a grammatical word do not coincide

In every language, a grammatical and a phonological word coincide in most cases. Just in a minority of instances, one grammatical word may consist of more than one phonological word, and/or vice-versa.

Three options—specifically addressed in Chapter 2 and summarized in Diagram 1 in §1 there—are:

(a) A grammatical word consists of a whole number of phonological words—see §3 of Chapter 2, for an analysis of Yidiñ, an Australian language.
(b) A phonological word consists of a whole number of grammatical words, a rarer option, described for Jarawara in §4 of Chapter 2.
(c) A grammatical word consists of one and a bit phonological words (which implies that a phonological word consists of one and a bit grammatical words), quite a rare feature, described for Fijian, an Austronesian language, in §5 of Chapter 2.

Mismatches between grammatical and phonological word tend to involve reduplication, compounding, affixation, and complex predicates—the topics of §3.1 and §3.2. Clitics are morphological units which lack the full set of properties necessary for a phonological word and which form a unit with a phonological word preceding or following them. They constitute a further typical instance of mismatch between phonological and grammatical word. This is what we turn to in §3.3.

3.1 Reduplication

Reduplication is a well-attested morphological process (Dixon 2010a: 139–40, 2010b: 14–16; Beck 2017: 341–3 offers an up-to-date categorization of morphological types and occurrences of reduplication). Reduplication always results in the creation of a single grammatical word (which is what justifies referring to it as a 'morphological process': Beck 2017: 341). From the viewpoint of phonological wordhood, reduplication can be of two types:

(I) Cohering reduplication[3] results in the creation of one grammatical word and one phonological word. Within this volume, reduplication of cohering type has been described for Japanese (§3.1 of Chapter 3) and Hmong (§1.3.2 of Chapter 8).

(II) Non-cohering reduplication results in the creation of several phonological words: the reduplicant will form a separate phonological unit. Then, one grammatical word will consist of several phonological words (option (a), in Chapter 2). For instance, in Fijian, full reduplication yields one grammatical word made up of two phonological words. Within one phonological word, a sequence *o* and *i* is pronounced as a diphthong, e.g. *voi.voi* 'pandanus'. Across a boundary between phonological words, each vowel is pronounced separately, e.g. *ilo.ilo* 'glass'. Within this volume, non-cohering reduplication is described for Jarawara (§4 of Chapter 2), Japanese (§3.1 of Chapter 3), Chamacoco (§5.1 of Chapter 4), and Murui (§3.3 of Chapter 5).

A language may combine two kinds of reduplication, cohering and non-cohering. Each will differ in terms of its meanings and applicability. Cohering reduplication in Yalaku (§5.1 of Chapter 6) is a feature of nouns, adverbs (verbal modifiers), and verbs, but not adjectives. A phonological word containing cohering reduplication has a single stress, on the second component. Internal voicing of stops serves as an additional indicator that we are dealing with one phonological word. Non-cohering (re)duplication can involve an adjective, a noun, an adverb, a number word, a free pronoun, and a verb root (which would also allow triplication). The resulting form consists of one grammatical word and as many phonological words as there are reduplicants. Each reduplicant has its own stress, and the word-internal phonological processes do not apply. The two types of reduplication contrast with regard to how they apply to nouns and to verbs. Cohering reduplication of a verb root produces intensive meaning, as in *hor-kór-* 'do a lot', while non-cohering reduplication expresses iteration and repetition of an action, e.g. *hór hór* 'do many times over'. Cohering reduplication of a noun root yields distributive meaning, e.g. *kai-gai* 'every house', and non-coherent reduplication implies complete involvement, e.g. *kái kái* 'all the houses'.

Lao has two kinds of reduplication. Type A (§5.2.5 of Chapter 7) is cohering, and operates on a monosyllable and results in the creation of one phonological word (and a disyllabic foot), where the first reduplicant is unstressed and carries no tone. The resulting form may have attenuative meaning, as in *ñaj1* 'big', *ñaj⁰.ñaj1* 'biggish'. This can be considered an instance of 'prefixal' reduplication (Beck 2017: 343), since the first syllable is a dependent form. Some instances of cohering reduplication have not-fully predictable idiosyncratic meanings, e.g. *dii3* 'good', *di⁰.dii3* 'somewhat good, properly'. This is consistent with the principle of iconic motivation: the closer the

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[3] The terms 'cohering' versus 'non-cohering' go back to Dixon's (1977: 90) classification of affixes in Yidiñ.

components, the stronger the conceptual link between them (in accordance with Haiman 1980: 814).

Type B reduplication (§6.2 of Chapter 7) is non-cohering and results in the creation of a single grammatical word pronounced as two phonological words. The first reduplicant is pronounced with tone 2 (high rising pitch contour). In contrast to type A reduplication, there are no constraints on the forms that can serve as input to type B reduplication (it can operate on a foot or even a whole phrase). The resulting meaning is that of intensity, e.g. *ñaj1* 'big', *ñaj2 ñaj1* 'very big'. The meanings of the forms are typically compositional, again, in contrast to type A.

The two types of reduplication have not, so far, been given appropriate attention in the literature dealing with the phenomenon. Their co-existence in a single language and their potential correlations with the principle of iconic motivation may provide further insights into the inner workings of each language.

3.2 Compounding, complex predicates, and affixation

Compounding is a well-known morphological process whereby two (or more) roots join together to form one stem and one grammatical word. Noun-noun compounds form one phonological word in some languages, including English, Buru, and Comaltepec Chinantec (Aikhenvald 2007: 25 and references there; Dixon 2010a: 138–41), and Japanese (§3.1 of Chapter 3). Nominal and verbal compounds in Hmong form one grammatical and one phonological word (§3.4.2 of Chapter 8). In others, compounds may consist of more than one phonological word (option (a) in Chapter 2). This is what we find in Jarawara (§4 of Chapter 2), Murui (§3.1 of Chapter 5), Yalaku (§5.3 of Chapter 6), and, arguably, in Lao (§5.1 of Chapter 7). Complex predicates, conjunctions, and one interrogative adverb in Chamacoco comprise one grammatical and several phonological words (§5 of Chapter 4); this is in contrast to the limited number of nominal compounds which form one word on both counts (including the term for 'word' in the language: §1.1 of Chapter 4).

Along similar lines, when a noun is incorporated into a verb, the resulting construction results in the creation of one grammatical word (see Aikhenvald 2007: 11–21, Fortescue et al. 2017; and especially Mithun 1984, for a treatment of lexical compounding as a subtype of noun incorporation). Noun incorporation may produce one phonological word, as in Palikur, an Arawak language (Green et al. 2016), or several, as in Boumaa Fijian (Dixon 1988: 25, 226).

Echo-compounds consist of two components one of which is an 'echo alliteration' of the other. This is also known as expressive reduplication and 'echo-words'. Typical examples are similative plurals in Turkish *dergi mergi* 'magazines, journals, or anything like it' (cf. *dergi* 'journal'), or dismissive *sh-* echo-words in Yiddish and in English, such as *Oedipus-Shmeodipus* (see, for instance, Haig 2001: 208–9, Southern 2005, and further discussion of alternative terms for this phenomenon in §5.2 of Chapter 6). Echo-compounds in Yalaku can be formed on verbs, nouns, and

adjectives, with the meaning of complete involvement or complete degree; with some nouns it involves similative plural, e.g. *káitepa* 'village', *wáitepa.káitepa* (ECHO.village) 'villages and things like that'. They form one grammatical and two phonological words: each repetition has its own stress and word-internal phonological processes do not apply on the boundary between the two components.

Echo-compounds share similarities with what Enfield calls 'elaborative reduplication' in Lao (§6.1.1 of Chapter 7). The technique involves repetition of a noun, with vowel mutation: if the vowel of the stressed syllable is a back vowel, the rule is 'change back to front vowel, at the same height'. The meaning is that of 'similative plural', e.g. *kakhuq1* 'bucket', *kakhuq1 kakhiq1* 'buckets and stuff'. Many roots have idiomatic reduplicants which can be considered semi-suppletive, e.g. *nam4* 'water', *nam4 naj2* 'water and stuff'.

In contrast to echo-compounds in Yalaku and other languages mentioned in §5.2 of Chapter 6, 'reduplicative pairings' in Lao do not form a grammatical word, in the same way compounds do in the language. The members of the pairs do not have to occur adjacent to each other, thus violating the feature of 'cohesiveness' necessary for a grammatical word. Some of the pairings are non-compositional—for instance, *hùan2 saan2* (house verandah) 'house/home'. In this sense, they are close to compounds. Their interruptability shows that they should be best considered fixed multiword expressions—in Enfield's words, 'paired elements that relate to each other in a way that is similar to English pairs *goods and chattels* and (*to all*) *intents and purposes*' (similar analytical issues have been reported for Vietnamese: Schiering et al. 2010: 666; see also Moon 2015 on 'multi-word' expressions and idioms in English).

The structure of coordinate compounds and equivalent elaborate expressions in Hmong points in the same direction (§3.4.3 of Chapter 8, and Jarkey 2015: 232–7 for a discussion of elaborate expressions, traditionally referred to as *lus ua txwm* (word make pair) 'paired words'). Their components have to occur together but not necessarily next to each other. Such expressions are best treated as multiword idioms rather than single grammatical words. In a dictionary, at least some of them can be treated as an individual lexical entry, extending beyond just a 'word' in a grammatical or a phonological sense.

A complex predicate can form one phonological word and comprise a whole number of grammatical words (instance (b) in Chapter 2; see §4 there). In Jarawara, a complex predicate consists of a non-inflecting verb and an auxiliary (each forming an independent grammatical word). When accompanied by a rich array of optional suffixes marking tense, aspect, mood, negation, and a number of other meanings, the auxiliary *na* forms an independent phonological word. A minimal word in Jarawara has to contain at least two moras. If the suffixes are omitted, the monomoraic auxiliary cannot form a phonological word on its own, since it does not satisfy the minimal word requirement. Then the auxiliary and the uninflected verb form one