

Phonological grouping as an independent typological parameter

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Part I. Two rather different views on phonological grouping with long histories each, mutually unaware

Syntactic determinism:

phonological grouping = essentially surface syntactic grouping,
though subject to certain adjustments

- direct, in one way or another: Kaisse 1985; Selkirk 1984, 1995/1996, Kratzer & Selkirk 2007 (Truckenbrodt 2007 not quite); Seidl 2001, et multi alii;
earlier also German grammarians such as Behaghel 1904;
- mediated by a prosodic hierarchy (aligned to syntactic grouping):
Nespor & Vogel 1986 (reissued unchanged in 2007) et multi alii.

(For an overview see Elordieta 2008.)



Child at Corner of Co-op, Haswell, 1960

<http://ppparchive.durham.gov.uk/photos/picviewer.asp?next=742>

Rhythmic grouping:

phonological grouping – in informal, casual speech, with *INVENTIO* (planning what to say, content-wise) and *DISPOSITIO* (grammatical constructing) completed for a relevant domain, and with only *ELOCUTIO* (pronouncing) to be taken care of – is independent of syntactic grouping, except insofar as it respects:

- (i) clause boundaries (reflecting major planning and constructing units);
- (ii) the distinction between lexical and grammatical forms (the former typically (though not always) come with inherent prominence, assigned lexically);
- (iii) perhaps inherent weight (quantity, branchingness);
- (iv) focus (which also adds prominence, and attenuates prominence in parts following the focus).

- phoneticians-cum-prosodists such as Joshua Steele (1775/79), Henry Sweet (1876, 1877, 1885, 1887), Eduard Sievers (1901a, 1901b), Karl Luick (1923) for English, German, and a range of further languages, mostly Germanic;
- leading German grammarians such as Hermann Paul (1916-20);
- greatly elaborated by Sievers' student, Franz Saran (1907, 1934);
- continued to be occasionally advocated in theory and practice (e.g., Abercrombie 1964a/b, Gimson 1962, Fudge 1999 for English; Eisenberg 1998 for German; Fretheim 1981, 2001 for Norwegian);
- revived by us (Lahiri et al. 1990, Wheeldon & Lahiri 1997, 2002, Plank 2005, Lahiri & Plank 2010).

Rhythmic grouping exemplified:

Joshua Steele's CADENCES

18th century English, according to Joshua Steele, *Prosodia rationalis* (1775/1779: 28, omitting much notational detail);

() enclose CADENCES, with the main grouping principle being: a stressed syllable (possibly catalectic) begins a new cadence, which then includes all unstressed syllables up to the next stressed syllable.

(Every) (sentence) (in our) (language), (whether) (prose or) (verse •),
(– •) (has a) (rhythmus) (– •) (– pe) (culiar) (to it) (self) (– •);
(that is, in the) (language of) (modern mu) (sicians), (– it is)
(either in) (common time) (– or) (triple time); (– vi) (delicet),
(minuet time), (– or) (jigg time), (– or) (mixed •).

Henry Sweet's TONE-GROUPS (1876 etc.)

-pijpl juwsttəpiŋkði əəð wəzəkaindəv flæt keik` , -wiððə sijəl raundit
bətwiʝ nou nauðætits riəli ·raund` ,

To explain the notation: transcription is in Sweet's Broad Romic. Starke Silben werden durch vorhergehende Spatien angedeutet ...; ohne Spatien geschriebene Silben dagegen sind schwach; ... schwach betonte, im Satzanlaut stehende Silben werden durch vorgesetztes (-) bezeichnet. (Sweet, *Elementarbuch des gesprochenen Englisch*, ³1904: 57; later editions have conventional orthography)

in conventional English orthography:

People **used to** (Focus) think the earth was a flat cake, with the sea all round it; but we know now that it's really round.

syn grouping:

[[people] [[[used to] [think]] [[[the] [earth]] [[was] [[a kind] [[of] [[flat] [cake]]]]]], [[with] [[[the] [sea]] [[all] [[round] [it]]]]]]]
[[but] [[we] [[know] [now] [[that] [[it] ['s] [really] [round]]]]]]]

A. C. Gimson, *An Introduction to the Pronunciation of English* (1962 etc.):

They (COULD n't have) (CHO sen a) (BET ter) (TIME for their) (HO li day)

(MA ry and) (GEORGe) (SPE ci al ly) (WANT) (to GO) (to MOR row)

(MA ry and) (GEORGe) (SPE ci al ly) (WANT to go to) (MOR row)

Eduard Sievers' SATZTAKTE (1901 etc.)

NIE mals hät te ich ge)_T GLAUBT]_T SO von dir be)_T TRO gen zu wer den ||_T

without focusing:

ich hät te ge)_T GLAUBT ||_T von dir ge)_T LIEB(T) zu wer den ||_T

i.e., a prominent syllable establishes a tact (T), or also an Auftakt (anacrusis, itself without prominence), by way of adding a tact-end before itself (end-marking); additional tact-ends are forced by strong syntactic boundaries (clause).

Franz Saran (1907, 1934), much elaborating on Sievers' Satzakte
 prosodic hierarchy

Rangordnung der Gruppen

und der zugehörigen Grenzen

der Silbenkamm

die Silbe

die Lasche

das Unterglied

das Glied

das Doppel-/Tripel-Glied

der (Haupt-/Neben-)Bund

die Reihe

die Kette

das Gebinde (=Kettenverbindung)

der Gesätz

die Scheide

die Naht

das Gelenk

die Fuge

die Lanke

die Kehre

die Wende

der Absatz

... up to here:

unvollkommener Schluss

vollkommener Schluss

from now on ...

Acoustic means of grouping:

- i. Zeitabstufung: long = end, short = beginning of a group (Iambic/Trochaic Law)
- ii. Abstufung der Lautheit (?)
- iii. Tonale Beziehungen, Tonbewegung (boundary tones): größere/kleinere Intervalle, gebrochene/ungebrochene Tonfolge = Trennung/Verbindung; Tonlage wie in Isolation trennt; Kadenz trennt
- iv. Anordnung der Laute nach der Schallkraft: syllabification across morphosyntactic boundaries in line with Schallkraft/sonority sequencing and onset maximization: Verbindung
- v. (Artikulations-/Schall-)Pause
- vi. Silbenbindung (Legato, Portato, Staccato – letzteres trennt)
- vii. Änderung der Stimmqualität (Voll-, Murrel-, Flüsterstimme)
- viii. Wechsel der Tonlage
- ix. Wechsel der Klangfülle
- x. Wechsel des Tempos: Accelerando am Anfang, Rallentando am Ende größerer Gruppen
- xi. Wortstellung: Inversion trennt

Example

((((a ber auch) (DAS))_{GL})_{BU} ((was man)_{GL} ((AUF be)_{GL} (wahrt)_{GL})_{DGL})_{BU})_{REI}
((((muss doch dem) (SI nne)_{GL} (DES sen)_{GL})_{DGL} ((der es)_{GL} (AUF be)_{GL} (wah ren)_{GL}
(soll)_{GL})_{DGL})_{BU} ((ent SPRE chen)_{GL})_{BU})_{REI})_{KE}

(((but also) (THAT))_{BU} ((what one) (PRE) (serves))_{BU})_{REI}
(((must still the) (INterest) (of HIM) (who it) (PRE) (serve) (should))_{BU}
(correSPOND)_{BU})_{REI}

A modern German grammarian:

Eisenberg 1998, Aufgabe 15, slightly re-phrased:

Der Nordwind und die Sonne

eins (STRIT tn sich) (NORD win dun) (SON ne) | (WER vo nihm bei dn
wohl der) (STÄR ke re wä re) || als ein (WAN de rer) | der in ein (WARM)
(MAN tl ge) (HÜLLT war) | des (WE ges da) (HER kam)

Rhythmic grouping: integrity of **morphological/lexical** words not respected

a. German (Sievers 1901a)

[Alle Hoffnungen] [[sind] [ihm] [ge-scheitert]]

(AL le) (HOFF nuŋ en) (SINT ihm ge) (SCHEI tert)

b. NIEmals hätte ich ge-glaubt, SO von An.tonia be-trogen zu werden.

(NIE mals hät te ich ge) (GLAUBT) | (SO von an) (TO ni a be)

(TRO gen zu wer den)

c. Dutch (Sweet 1877)

(Heb je) (goed ge) (slapen) ?

[ghutghe] !?

(De) (koude) (maakt de) (luiheid on) (mogelijk)

[maıgddeh],

with regressive assimilation

d. English (Steele 1775/1779)

(modern mu) (sicians)

(– pe) (culiar) (to it) (self)

- e. Middle English (Sweet 1887, transcribing Chaucer's *Canterbury Tales*, General Prologue)

:whan:þata prille :wipis ſuures swoote

-þe druxtof martſ -haþ perſedtoope roote

When [that] April with his showers sweet

The drought of March has pierced unto the root

The question: Given an alternating sequence of strong (S/Lex) and weak (W/Gram) elements of a complete construction (say, a sentence/utterance), how are they to be grouped phonologically?

Answer A: Their phonological grouping – into feet, phonological words, and whatever further more comprehensive units – follows the syntactic grouping.

For example, if a weak/grammatical element is a determiner and the following strong/lexical element a noun and together they form a noun (or determiner) phrase, then they also are to be grouped together phonologically, with the weak element perhaps procliticised.

syn grouping:	Lex	[Gram _{DET}	Lex _N]	NP	Gram	Lex	Gram	
phon grouping:	S	(W	S)	W	S	W

Answer B: The syntax doesn't matter; what matters is a different sort of decision – one about the rhythm that a language follows in structuring the pronunciation of syntactic constructions.

If, for the example just given, the rhythm is to be **trochaic** (or also **dactylic**, given sequences such as S W W S W W ...), then the phonological grouping would be like this:

syn grouping:	Lex	[Gram _{DET}	Lex _N]	NP	Gram	Lex	Gram
phon grouping:	(S	W)	(S	W)	(S	W)	

If the rhythm is to be **iambic** (or also **anapaestic**, given sequences such as S W W S W W S ...), then the phonological grouping would be different, coincidentally matching the syntactic grouping for the two elements singled out for illustration:

syn grouping:	Lex	[Gram _{DET}	Lex _N]	NP	Gram	Lex	Gram
phon grouping:	(• S)	(W	S)	(W	S)	W	

Answer A

syn grouping: Lex Gram [Lex_v Gram_{AUX}] Lex Gram
phon grouping: S W (S W) S W

Answer B/trochaic

syn grouping: Lex Gram [Lex_v Gram_{AUX}] Lex Gram
phon grouping: (S W) (S W) (S W)

Answer B/iambic

syn grouping: Lex Gram [Lex_v Gram_{AUX}] Lex Gram
phon grouping: (• S) (W S) (W S) (S) W

semantic structuring:

<must <P: seem_{P,z}, <P: echo_{x,y}, x: sound^{def}, y: sense^{def}>, <z: arb>>>

morphosyntactic grouping:

[[The_{Gram} sound_{Lex}] [[must_{Gram} seem_{Lex}] [[an_{Gram} echo_{Lex}] [[to_{Gram/Lex?}
[the_{Gram} sense_{Lex}]]]]]]

phonological grouping:

- a. syntactic
(the SOUND) (must SEEM) (an EC.cho) (to the SENSE)
- b. rhythmic: trochaic – independent of, indeed against syntax
the (SOUND must) (SEEM an) (EC cho) (TO the) (SENSE •)
- b'. rhythmic: iambic – independent of, less blatantly against syntax
(the SOUND) (must SEEM) (an EC) (cho TO) (the SENSE)

If the right answer is that phonological grouping is independent of syntactic grouping and is due to an overall rhythmic decision, then the next question (unanswered or indeed unasked by Steele, Sweet, Sievers, Saran et al.) would be **what motivates that rhythmic decision for a particular language.**

Possible answers are:

(i) The Iambic/Trochaic Law

If S/W is a matter of quantity, then grouping will be iambic;

if S/W is a matter of intensity, then grouping will be trochaic.

(ii) Projection of lexical grouping (word-level) to grammatical grouping (phrase/clause-level).

(Possible problem in Germanic: Modern Icelandic, which has initial stress for words (trochaic at word-level), but final stress for phrases (iambic).)

Part II: Why we favour the rhythmic theory (for Germanic)

- on synchronic grounds: enclisis the default, proclisis marked
- on diachronic grounds: left-association of weak words,
on the evidence of form changes which
can only be accounted for on the
assumption of left- rather than right-
association
(for detail see Lahiri & Plank 2010)
- on experimental grounds: latency for onset of speech production
(see Lahiri, Jongman, & Sereno 1990,
Wheeldon & Lahiri 1997, 2002)

1. Synchrony: Encliticisation as default, not the exception, in Germanic

- English infinitival COMP (or AUX) *to* > *tə*
oughta, hafta, gonna, wanna, sposta, planta, ...
- English modal AUX and COP:
=s, =d, =ll; =of (should=have), ...
requiring deletion of onset consonants and attenuations of vowels,
with coda consonants retained
- English preposition *of* > *=ə*:
Drink=a pint=a milk=a day
requiring deletion of coda consonant and attenuation of vowel

- Weak/clitic forms of object pronouns, associating with the verb or other left-hand anchors:

German (Bavarian): *er gib(t)=mɐ* 'he gives me ...'
wenn=ɐ=mɐ=s gibt 'if he gives me it'
wenn=ɐ=s=mɐ gibt 'if he gives it me'

- Coordinative conjunctions, which symmetrically join two conjuncts semantically and morphosyntactically phrase with the second conjunct in languages like English (which is also in accordance with their historical origin); but they are enclitic rather than proclitic in phonological grouping, at least in informal speech;

sem grouping: & <fish, chips>

syn grouping: [fish] [and [chips]]

phon grouping: ((fish) =n) (chips)

formal changes, implausible if *and* were proclitic: loss of vowel and of final vowel, assimilation of surviving nasal to left-hand rather than to right-hand conjunct (**bread m butter, *up n down*).

- Definite articles, of the shape CV(C), are somewhat ambivalent in their cliticisation behaviour. Even though they are right-associating when lacking a vowel, as proclitics or even prefixes, they do provide some evidence for an encliticisation preference when syllabic.

Definite articles on post-verbal object nouns in informal Standard German

[frag [den Peter]]

(FRA gŋ) (PE ter), *(FRAG) (mPE.ter)

only permissible at speech rate/style
where nasal assimilation occurs across
phon phrase boundaries anyhow

- Do non-syllabic definiteness markers associate left or right in Bavarian? And how could they come about in the first place?

right, if there isn't anything at the left:

<i>b Frau Meier is da</i>		‘th Mrs Meier is here’
<i>(v)s Auto is weg</i>	[(v).s(?)aʊ.to]	‘th car is gone’

right, if yielding permissible (syll-)onsets:

<i>frag d Oma</i>	[tʔo:mə]	‘ask th granny’
	(.tʔV permissible?)	
<i>frag d Tante</i>	[tantə]	‘ask th aunt’
<i>frag d Mamma</i>	[pmama]	‘ask th mum’
	(.pmV permissible?)	
<i>frag d Fanny</i>	[pfani]	‘ask th Fanny’
<i>frag d Paula</i>	[paula]	‘ask th Paula’

left otherwise

frag (ɐ)s Kind

‘ask th child’

*frag (ɐ)n/*m Fritz*

‘ask th Fritz’

really?

hol d/b Frau Meier

‘get th Mrs Meier’

ohne d/b Frau Meier

‘without th Mrs Meier’

frag (ɐ)n Otto

*[frag.n(?)ɔ.to]

‘ask th Otto’

[fra(g)ŋ.ɔ.to]

[fra.gə.nɔ.to]

nimm (ɐ)s Auto

*[nim.s(?)aʊ.to]

‘take th car’

[nims.aʊ.to]

[ni.mɐ.sau.to]

How is *d* DEF.ACC.SG.FEM/ACC.PL actually realised in Bavarian (similarly in Alemannic) in combination with the different onsets of nouns, in NPs which are the direct objects of a preceding verb in the imperative?

Since Bavarian has no voicing contrast in labial and dental stops, the dental *d*, when realised, is a voiceless [t].

a.	<i>Hol</i>	∅	<i>Decken!</i>	'Get the	blankets!'
		∅	<i>Gans</i>		goose
		∅	<i>Kissen</i>		cushions
		∅	<i>Betten</i>		beds
b.	<i>Hol</i>	∅	<i>Pfannen</i> [pf]	'Get the	pans!'
		∅	<i>Zither</i> [ts]		zither
c.	<i>Hol</i>	[pf]	<i>Federn</i> [f]	'Get the	feathers!'
		[ts]	<i>Sachen</i> [s]		things
		[tʃ]	<i>Schüssel</i> [ʃ]		bowl
		[tv]	<i>Wannen</i> [v]		vats
		[th]	<i>Hosen</i> [h]		trousers

d.	<i>Hol</i>	[tl]	<i>Leiter</i>	'Get the	ladder!'
		[tn]	<i>Nägel</i>		nails
		[tr]	<i>Reiter</i>		riders
		[pm]	<i>Milch</i>		milk
e.	<i>Hol</i>	[tʔ]	<i>Ecken</i>	'Get the	corners!'

That is, before stops and affricates of all places of articulation the plural and feminine singular accusative definite article, syncretic with nominative, has become inaudible (a/b); before fricatives and sonorant consonants its single coronal segment remains (c/d), getting assimilated to labials, and frequently yielding onset clusters impermissible at left word edges ([tv, th, tl, tn, pm]; before vowels (e), the coronal segment remains too, inducing a glottal-stop-like onset not so prominent with vowel-initial words otherwise in Upper German and thereby bringing about minimal pairs such as *die Decken* [tɛkŋ] – *die Ecken* [tʔɛkŋ]. The [t] does not become a true onset, a situation which is identical to that of the unstressed prefixes, which do not resyllabify either: *beʔantwortet, mitʔarbeiten*.

Such formal alternations would seem different to reconcile with a general preference for all grammatical words to phonologically associate leftwards. Still, without further study we do not want to rule out that even plain consonantal /t/ does lean left rather than right in such varieties of German (which could account for minimal pairs like that just mentioned).

On the other hand, definite noun phrases are topics, and as such will frequently occur in sentence-initial position – with plainly nothing there to left-associate with. This is perhaps the most salient situation where the phonological phrasing default can be overruled, and procliticisation is getting its rare chance.

- Analogous questions to be asked about non-syllabic infinitival complementiser *z* (in contrast with *zun/zum*) in Bavarian and Alemannic (*nix z'essn* 'nothing to eat'); and about the counterparts of these very same elements in Yorkshire English, where they are equally non-syllabic (*t(h)'book*; *t'eat*)

- Definite article segmentally reduced in Upper High German (Bavarian, similarly in Alemannic – with an anaphoric (=syllabic) and a unique-reference (= non-syllabic) definite article distinguished in Bavarian, and with the syllabic form required before an adjective in Swiss Alemannic)

	M	N	F	PL	>	M	N	F	PL	>	F	PL
NOM	<i>d-er</i>	<u><i>d</i></u> - <i>as</i>	<i>d-ie</i>	<i>d-ie</i>		<i>dʁ</i>	<i>(ʁ)s</i>	<i>de</i>	<i>de</i>		<i>d</i>	<i>d</i>
ACC	<u><i>d</i></u> - <i>en</i>	<u><i>d</i></u> - <i>as</i>	<i>d-ie</i>	<i>d-ie</i>		<i>(ʁ)n</i>	<i>(ʁ)s</i>	<i>de</i>	<i>de</i>		<i>d</i>	<i>d</i>
DAT	<u><i>d</i></u> - <i>em</i>	<u><i>d</i></u> - <i>em</i>	<i>d-er</i>	<u><i>d</i></u> - <i>en</i>		<i>(ʁ)m</i>	<i>(ʁ)m</i>	<i>dʁ</i>	<i>(ʁ)n/de</i>			
GEN	<u><i>d</i></u> - <i>es</i>	<u><i>d</i></u> - <i>es</i>	<i>d-er</i>	<i>d-er</i>		<i>(ʁ)s</i>	<i>(ʁ)s</i>	<i>dʁ</i>	<i>dʁ</i>			

Reductive changes: (i) Delete the first consonant (/d/), unless there would be no consonant left; (ii) delete final /ə/.

What sort of **phon**-grouping of the definite article would naturally account for that sort of consonant-deletion pattern?

Invariable right-association (as the syntax would have it) wouldn't. These are plausible reductions when the definite article forms the end of a phonological group, irrespective of the onset of the following constituent.

- Equally clear, definite article on object noun phrases in Dutch (Lahiri, Jongman, & Sereno 1990, Wheeldon & Lahiri 1997, 2002)

Ik [zoek [de krant]] ‘I am looking for the newspaper’
 (ik) (zoek) (de krant)
 (ik) (zoek de) (krant)

Voicing assimilation allows for two options: (zoekte) or (zoegde)

- (a) Regressive assimilation obligatory across parts of compounds

<i>meetband</i>	mee[d][b]and	*mee[t][p]	*mee[t][b]and	‘measuring tape’
<i>zakdoek</i>	za[g][d]oek	*za[k][t]oek	*za[k][d]oek	‘handkerchief’

- (b) Regressive assimilation optional across phonological words in a phrase or across phrases

<i>ik vind Joop dun</i>	joo[b][d]un	*joo[p][t]un	joo[p][d]un	‘I find Joop thin’
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- (c) Regressive assimilation across clitics

<i>ik zoek haar (der)</i>	zoe[g][d]er	zoe[k][t]er	*zoe[k][d]er	‘I look for her’
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Why the difference? Note that in *zoekter* there is no regressive assimilation but rather the voiced [d] becomes voiceless.

Two options:

- either *der* is part of the preceding word like a single lexical item and then the constraint for such items comes into play: viz., no voiced clusters word-internally (there is probably one exception, *abdomen*);
- or *der* cliticises to the preceding word and becomes a single phonological word and undergoes voicing assimilation like a compound;
- but *der* must share the voicing of the preceding word, either voiced or voiceless.

Concerning the definite article:

Ik zoek de krant

ik (zoe[k] [t]e) _ω (krant) _ω	progressive assimilation of def art
ik ((zoe[g]) _ω [d]e) _ω (krant) _ω	regressive assimilation of verb
*ik (zoe[k]) _ω ([d]e krant) _ω	no assimilation

2. The judgement of history: incontrovertible

Our own contribution here (Lahiri & Plank 2010) is an indirect one: examining a few historical changes in Germanic, we are asking:

By what sort of phonological grouping could they have been enabled or encouraged?

That is, we seek to identify the kind of phonological grouping that was so salient as to have **shaped** the morphosyntax or also lexical representations.

Answer: rhythmic grouping

– as demonstrated by an overwhelming preference for encliticisation over procliticisation, and ensuing suffixation over prefixation, despite Gmc syntax being overwhelmingly iambic, GRAMM - LEX.

Germanic: rather consistently grammatical/weak words before
lexical/strong words

a. DET – N (with definite and indefinite articles, demonstratives,
and possessives as prototypical DET's):

*the sound; a sound; no sound; this sound;
such sounds; my sound*

b. QU – N:

both sounds; five sounds

c. PARTICLE – N:

only sounds

d. AUX – V:

can hear; has heard; was heard

e. ADV – A/V:

very loud; more/most beautiful; (we) almost lost

f. PREP – NP:

with sounds

g. CONJUNCTION – CONJUNCT: *fish [and chips]; old [and infirm];
come [and go]; [either fish] [or chips]*

h. COMP – VP/CLAUSE: *to come; that/if/why they come*

"exceptions":

- a. verb PARTICLES in English: *[Put on] a coat*
- b. some POSTPOSITIONS: *years ago; such examples aside*
(or: *aside from such examples*)
- c. NEG after AUX in English: *you [must not] lie*
(as different from *you must [not lie]*)
- d. NEG after main verb in earlier English: *I know not*
- e. NEG after V or AUX with Finite-2 in German: *du [darfst nicht] lügen*
'you [must not] lie', as opposed to Finite-final order, where NEG is before V, see f.
- f. AUX after V with Finite-final in German: *weil du nicht [lügen darfst]*
'because you not lie must'
- g. certain focus PARTICLES: *Otto selbst* 'Otto himself' (with stress on final PRTCL), as opposed to *selbst Otto* 'even Otto' (stress on N)
- h. "floated" QU: *the books both* (with stress on floated QU), as opposed to *both books* (stress on N)

Virtually all of Germanic **inflection** is **suffixal** rather than prefixal, and there are a number of attested or plausibly reconstructed cases where inflectional suffixes, or exponents on the way to becoming suffixes, have been created from enclitics through "univerbation" – which suggests that when there were clitics, they were enclitics rather than proclitics.

- Dental suffix of preterite of weak verbs < V=AUX ‘do’:

Stage I	$((\text{ROOT-}/j/_{\text{TRANS}}\text{-INF})_{\omega} (\text{do-TNS.MOOD.PRS.NMB})_{\omega})_{\phi}$
Stage II	$((\text{ROOT-}/j/_{\text{TRANS}})=\text{do-TNS.MOOD.PRS.NMB})_{\omega}$
Stage III	$((\text{ROOT-}/j/_{\text{TRANS}}\text{-}d)\text{-TNS.MOOD.PRS.NMB})_{\omega}$
Stage IV	$(\text{ROOT-}d\text{-TNS.MOOD.PRS.NMB})_{\omega}$

- Mediopassive of verbs in Scandinavian Germanic:

V-MED/PASS < V=REFLEXIVE

e.g., Swedish *upptäck-te-s* discover-PRET-PASS < *upptäck-te=sik*

- Dual (nominative) of 1st/2nd person pronouns in *-t* < PRO.1/2PL=two
e.g., Old English *wit, git* DUAL, *we, ge* 1st and 2nd person NOM.PL

- Definite article of nouns in Scandinavian Germanic:

N-DEF < [N [DEM A]], (N=DEM) (A)

hus-et [house [that big.one]], (house=that) (big.one),
with position of A subsequently changed to prenominal

against syntax!

The noun article has mixed suffix and enclitic properties:
enclitic with respect to tonal accents – phonological change thus
slower than morphosyntactic change

- Negative AUX-*n't* in English < V=*n(o)t*
probably also mixed suffix and enclitic
- “inflected” prepositions in German (especially dialects such as Ruhrdeutsch):

PREP-DEF N < (PREP=[DEF) N]
e.g., *in-s*, *zu-r* < *in=das*, *zu=der*
- Inflected complementisers in German dialects such as Bavarian (especially 2SG):

COMP-PRS.NMB (PRO) < COMP=PRO

(or also direct extension of verbal inflections)

e.g., *ob-st du komm-st* < *ob=st komm-st* < *ob du komm-st*
'whether-st thou come-st'

- Verbal inflection for 2SG.IMP in informal speech in Icelandic
-*ðu*, -*du*, -*tu* < reduced form of enclitic personal pronoun
- Accretion of verbal inflection for 2SG -*st* < -*s=t* -2SG=PRO.2SG
(*thou/du*)

- The only inflectional **prefix** in Germanic is verbal *ge-* for perfective/resultative aspect and participle: was often gotten rid of, in different ways – most instructively in (c), a specifically Low German development, showing that prefixes, when unstressed, are phonologically grouped with preceding material, from the last prominent syllable onward.
 - a. English: phonological effacement
 $ge-V > je-V > i-V > V$
 - b. Upper High German: phonological effacement
 $ge-V > g-V > g/\emptyset-V$
 - c. Low German: phonological effacement after ENcliticisation
 $X ge-V > X=ge V > X=g V > X V$

Not only is there a clear suffixing preference for inflection in Germanic, with suffixes typically originating from enclitics, historical developments in Germanic show that ENcliticisation is the default (though under particular circumstances sometimes blocked) and PROcliticisation is possible only if there is no host available to encliticise on to.

This is what one expects from a rhythmic phonological grouping of grammatical words, not from a syntactic one.

The way the sound shape of clitics has come to differ from that of corresponding full forms, through prosodic reduction, implies left- rather than right-association.

- 1PL.NOM of personal pronouns often with labial onset instead of etymological *w-/v-*

e.g., MHG, Bavarian, Yiddish *mir*, Dutch *me*, Norwegian *mer*, because the subject pronoun is enclitic to an agreeing verb in *-en* when following it, with the assimilation $\dots n=v > \dots n/m=m$ then generalised to independent uses (*kommen=mir*, *mir kommen* 'we come')

- English "genitive", if the possessive pronoun was involved in the creation of enclitic 's:
John [his hat]
(John is) (hat)

3. Experimental results contradictory

- Wheeldon & Lahiri 1997, 2002, measuring latency for onset of speech:
 - What do you drink?

	DELAYED	IMMEDIATE
– (ik drink) (water)	short	short
– (ik drink) (vers) (water)	long	short
– (ik drink het) (water)	short	long

⇒ demonstrates rhythmic grouping against the syntax

- pre-boundary lengthening; interstress intervals – usually in read speech, or reproduction of read and memorised sentences
- strength of perceived break indices (Price et al. 1991)

Only **1** one **4** remembered **3** the **0** lady **1** in **1** red **6**.

[only one] [[remembered [[the lady] [in red]]]]

⇒ confirms syntactic grouping

- Wenk & Wiolland 1982
 (PHILlip is (STUdying at the uni (VERsity
 PhilLIPPE) étuDIE) à l'universiTÉ)
- "metrical segmentation strategy" in processing (Cutler & Norris 1988):
by LOOSE aNalogy
 misheard/missegmented as
by LUCE and ALlergy

When there is persistent disagreement, one reason could be that it is **not really a big deal** whether things are one way or another; another reason could be that **both sides have it right**.

Not a big deal?

Does really little or nothing depend on whether utterances are phonologically grouped as dictated by morphosyntax or by rhythm?

The resulting phonological group domains are different, and the questions therefore are where **boundary markers** are located if there are any and **which and how many phonological or phonetic processes are bounded** in terms of such domains.

The boundary markers at issue are **boundary tones** and the **pre-boundary lengthening of syllables**, rather than actual pauses (which is something delimiting higher domains than phonological phrases). Processes which are relevant here include **consonantal assimilations** and **deletions, vowel reductions** or also epenthesis, and the **syllabification of final consonants**. Consider (i):

- (i) a. (DRINK) (a PINT) (of MILK) (a DAY)
- b. (DRINK a) (PINT of) (MILK a) (DAY •)

The reduction of /ɔf/ to /ə/, by deletion of coda consonant (via voicing) and attenuation of remaining vowel, is a more plausible process in context (iib) than in (iia), after rather than before a stressed syllable in close association and with a preceding consonant resyllabified, with no resyllabification of the final consonant of *of* even when preceding a vowel-initial word:

- (ii) a. /ɔf.'mɪlk/, /ɔf.'eɪl/, */ɔ.'feɪl/ *of ale*
- b. /'paɪn.tɔf/

Owing to the reluctance of final consonants of weak constituents (such as prefixes and proclitics) to resyllabify across boundaries in Germanic, even in the smallest phonological domains, the bonding will always tend to be tighter between strong constituents and following weak constituents than with any weak constituents that precede them.

Consider sound shapes of weak constituents: VC, CV, CVC(C)

Both sides have it right?

For each utterance there are (at least) two alternative ways of phonological grouping, one syntactic and the other rhythmic. Circumstances like speaking style, speech tempo, or the way ELOCUTIO relates to INVENTIO and DISPOSITIO (e.g., prepared vs. spontaneous, careful vs. casual delivery) might favour either the one or the other, however different from one another.

Es verdient übrigens noch bemerkt zu werden, dass abgesehen von logisch oder rhetorisch besonders pointierter Sprechweise, wie sie namentlich dem gelehrten und schulmässigen Vortrage eigen ist, die rhythmische Gliederung des Satzes mächtiger zu sein pflegt als die etymologisch-logische nach Worten und grammatisch zusammengehörigen Wortgruppen.
(Sievers 1901b: 288)

Mandarin Chinese:

a. slow speech:

(Old Li) (buys) (good wine)

R L L R L

b. faster:

(Old Li buys) (good wine)

R R L R L

Underlyingly each word has a Low tone, and there is a tone rule turning a Low into a Rising tone when followed by L in the same constituent – which shows that the verb, a phonological phrase of its own in slow speech, is phonologically phrased with the subject in fast speech.

Important:

Differences in grouping depending on speech rate or style a matter of **eliminating** boundaries between adjacent phonological groups or of systematically **shifting** boundaries?

The former is the case in the Mandarin Chinese example and similarly elsewhere. The latter would be the case when iambic (ia) is re-grouped as trochaic (ib) in English. The relevant difference in Germanic thus would be **qualitative** rather than **quantitative**: there would have to be **two wholly different modes** of phonological grouping available

Note, as to real time processes:

Some **morphosyntactic forward-planning** when grouping rhythmically, with weak constituents nonetheless left- rather than right-associated at pronunciation:

(Drink an) (urn a) (tea a) (day •)

indef article *a/_C*, *an/_V*

Part III. Questions for typology

Conclusion so far:

Looking at the most natural grouping in spontaneous, casual speech (as distinct from pre-planned, careful speech or speech reproducing remembered text, as often studied in grouping experiments), there are languages – namely Germanic – where phonological grouping at the level of the phonological word (and perhaps clitic group) **systematically** deviates from surface-morphosyntactic constituent structure (on any plausible morphosyntactic analysis), and instead follows rhythmic principles, forming trochees/dactyls.

Thus:

Phonological grouping at the lowest grouping levels is an **independent** parameter for variation across languages, rather than automatically following morphosyntactic constituency. It needs to be studied in its own right, also with an eye to finding **co-variation** with other parameters.

First question:

Are there languages other than Germanic which group rhythmically rather than syntactically, or at any rate which have rhythmic grouping as an option?

Careful prosodic analysis of individual languages is required to establish such mismatching; this precludes a wide-ranging sample-based study, since the requisite prosodic detail is often missing even from substantial descriptive grammars. However, there is sufficient specialist work available to confidently conclude that the families which show massive misalignment of phonological and morphosyntactic constituency, especially at the word level, in addition to **Germanic**, include **Bantu**, **Penutian (Tsimshianic)**, **Wakashan**, **Yagua (Peba-Yaguan)**, **Austronesian (Philippine branch)**, **Tibeto-Burman**, **Munda**, and **Uralic**.

CYCLIC languages of North America

“cyclic” subtype of “excentric” type of relational marking (= (displaced) dependent-marking, vs. “concentric” type, = head-marking) in the typology of Milewski 1950: 170-174;

e.g., Tsimshianic (**Penutian**), Kwakiutl/K^wak’wala (**Wakashan**):

profile of area: VSO; head-marking; almost exclusively suffixing;
phrasal rather than word inflection; second-position clitics

See further Beck 2002.

Southern Tsimshian

nah dzákw=di ól=i xwán=it ee lax lɪkst'áa
PERF kill=[CONN1 bear]=[CONN2 deer]=[CONN3 PREP_{obl} PREP_{loc} island]
'the bear killed the deer on the island'

CONN1	transitive subject (past/perfect, common nouns)
CONN2	direct object (past/perfect, common nouns)
CONN3 + <i>ee</i>	oblique object (tense-neutral, PREP common nouns only)

Sm'algyax (Tsimshianic)

æ:m=æ χaldæwχk=æ səhæk^wdæk
[good=D medicine][=D yew.wood]
'yew wood is good medicine'

i.e., determiner encliticised to modifier in NP, not to NP-final noun

ɬæ tχæ:lpχ=a: k'ooɬ ndæ dzæk=æ nag^wæ:t-u
IMPF four[=D year] when die[=D father-1SG]
'it was four years ago when my father died'

Tsimshianic determiners behave phonologically as enclitics to the preceding word, resulting in a mismatch between syntactic and phonological constituency familiar from the Wakashan language K^wak^wala (Anderson 1991)

K^wak^wala

yó:s=e:ta	lé:lq ^{wh} alaλ ^h -aya=χa	q ^w á:χnis-e:
eat.with.spoon[=D _{3.DISTAL.SUBJ}	tribe-D _{3.DISTAL.INVISIBLE}][=D _{3.DISTAL.OBJ}	dog.salmon-D _{3.DISTAL.VISIBLE}]
'the tribes ate the dog salmon with spoons'		

Among the evidence for cliticisation: behaviour of schwa when followed by enclitic (Billings 2001).

Teke-Kukuya (Bantu, Niger-Congo),

as analysed by Hyman 1987, based on Paulian 1974:

Prefixes of dependent nouns in associative constructions are phonologically grouped not with the stems of which they are morphological co-constituents, but with stems which happen to precede them, across morphosyntactic boundaries:

morph-syn grouping: [Prefix-Stem [Prefix-Prefix-Stem]]
phon grouping: Prefix_{extraprosodic} (Stem Prefix_{pW}) (Stem_{pW})

ki-(lilɪ *kii-mu_{pW})-(kaay_{pW})*
CLASS-tear ASSOC-CLASS-woman
'tear of the woman'

The unit of a phonological word in Teke-Kukuya can be motivated through (i) tonal mapping patterns (lexical tone and postlexical tone, no spreading onto stem) and (ii) segmental distributions (consonant and vowel occurrences only definable over the domain (Stem Prefix); processes such as gemination).

Further on the lack of isomorphism between phonological word and syntactic constituents in Bantu:

Hyman 1985: **Bamileke-Dschang**.

Myers 1995: **Shona**.

Odden 1995.

Mchombo 2002 on Chichewa (p187):

syntactically independent demonstratives *izi* PROX, *izo* DIST for Class 10 nouns, equally *iyi* and *iyó* for Class 4 nouns, have reduced clitic counterparts: *zi*, *zo* and *yi*, *yo*.

They are attached to the immediately preceding full word.

But no mismatch because Demonstratives are postposed anyhow:

N Dem, N Num Dem, N Num Adj Dem

N [Assoc N Dem] Dem 'this story of this day'

profile of family: SVO; mostly head-, some dependent-marking;
mixed suffixing and prefixing; agglutinative morphology.

Santali (Kherwari group of Munda, Austro-Asiatic)

as described in Neukom 2001: 100, 113ff.

Verb prefixes for subject agreement are phonologically bound to any phonological word that immediately precedes the verb:

morpho-syn words: [əuri][e-h̃ɛg-re] [ɲ-dal-aka-e-tahɛn-a]

phon words: (əuri=e) (h̃ɛg-re=ɲ) (dal-aka-e-tahɛn-a)

(until=3SG.S-) (confess-LOC=1SG.S-)

(strike-CONT:ACT-3SG.O-CONT-IND)

‘I will continue to strike him until he confesses.’

In cases where the intonational phrase begins with a verb, these subject agreement markers appear as the last suffix on that very verb form.

Limbu, Kyirong, Galo (Tibeto-Burman)

A number of (only Southern!) Tibeto-Burman languages are on record as showing massive mismatching between morphological and phonological wordhood, with **suffixes (more so than prefixes!!!)** phonologically grouping with adjacent elements other than their stems; among them are Kyirong Tibetan (Hall & Hildebrandt 2008, Hildebrandt 2010) and Galo (Post 2009).

The Kiranti subfamily is probably equally ill-behaved, too; though here the offenders are prefixes (Schiering, Bickel, & Hildebrandt 2010).

Tagalog, Kapampangan (Philippine branch of Austronesian)

syntax: X [Det N] Y

phon grouping: (X Det) N Y

phonological grouping of Det with preceding lex word

Mandarin Chinese (Sinitic)

Cheng 1970, 1973, Shih 1986, survey of Shattuck-Hufnagel & Turk 1996: 202

a. slow speech

(Old Li) (buys) (good wine)

R L L R L

b. faster (perhaps in slow, careful speech too):

(Old Li buys) (good wine)

R R L R L

Underlyingly each word has a Low tone, and there is a tone rule turning a Low into a Rising tone when followed by L **in the same constituent** – which shows that the verb is phonologically phrased with the subject in faster speech.

South Saami (Uralic)

South Saami is reminiscent of Germanic insofar as "accent phrases" are a major prosodic domain: they trochaically begin with a pitch-accented syllable, and unaccented words (discourse particles, copula verb) are generally associated leftwards regardless of syntactic constituency (Bye 2010)

All entirely courtesy of Bye, p.c.; his source: Åsta Vangberg & Helen Blind Brandsfjell (2003) *Saemesth amma!*, published by Sijti Jarngé. References are to the book (1-4) and chapter. The grouping is based on the annotations Bye did of the digitised sound files.

Monosyllabic clitics cliticise to a preceding PrWd and generally take a H tone when there is one at the end of the phrase. Disyllabic clitics like *dihte* (focus particle) always form Accent Phrases. Clusters of two monosyllabic clitics may sometimes form an Accent Phrase, but they'll generally cliticise to the preceding PrWd and take the H-tone plateau intonation.

SA1;3

{ [SKUVtere (sãn lea)] }

Scooter PRT be:3SG.PRES

'It's a scooter, I suppose.'

{ [Jåvva] [DIHte] [VUAja] }

J. FOC drive-3SG.PRES

'It's Jåvva that's driving.'

{ [DIHte (sãn lea)] [GIRtie] }

that PRT be:3SG.PRES plane

'That's probably a plane.'

{ [GIRtie (sãn badth)] [LEA] }

plane PRT PRT be:3SG.PRES

'It's probably a plane all right.'

SA1;4

{ [JIRreden gujht] [BÅAtam] }

tomorrow PRT come-1SG.PRES

'Tomorrow I come, certainly.'

SA1;5

{ [novh] } { [manne gujht] [PRIHtjegem] [JOVkem] }

well I PRT coffee-ACC.SG drink-1SG.PRES

'Well, I'm certainly going to drink coffee.'

SA1;6

{ [manne mån] [BOVrese] [VAADtsam] }

I PRT shop-ILL.SG go-1SG.PRES

'I suppose I'll go to the shop.'

{ [LAEJpiem sån] [ÅASta] }

bread-ACC.SG PRT buy-3SG.PRES

'I suppose he's buying bread.'

SA1;8

{ [dellie hov] [BIJvele] [DUTnjien] }

then PRT warm you-ILL.SG

'Then it'll be warm for you indeed.'

SA1;10

{ [gâessie] [DIHte] [TJÅANGhkoe] [AALka] }
when FOC meeting begin-3SG.PRES
'When is it the meeting begins?'

SA2;1

{ [dellie maa] [AAJkohkh] [BÅEtieh] }
then PRT cousins come-3PL.PRES
'Verily then the cousins are coming.'

{ [dellie sãn] [GEEsjelihks] [GÅEtie] [SJİDti] }
then PRT proper house become-3SG.PAST
'Then I suppose a proper house came of it.'

SA2;3

{ [dohte jis] [GAEBpien] [AANtan] [AALtoe] }
that PRT G. A. reindeer.cow
'That in its turn is Gaebpie Aanta's reindeer cow.'

It might be instructive to compare monosyllabic particles to adverbs like *aaj* 'also' and *joe* 'already', which are always accented, and always form an Accent Phrase in their

own right (a following content word is always stressed).

SA1;3

{ [mannine] [AAJ] [HIJven] }

me-COMIT.SG also well

'I'm also fine.'

"Ditropic" clitics

There has lately been some discussion of clitics whose phonological associations are at odds with their syntactic associations. The clitic typology of Klavans 1985 did provide for such split linguistic personalities; but they did not fit some theoretical frameworks and their existence was therefore denied or explained away (e.g., Embick & Noyer 1999), while elsewhere it was reasserted (e.g., Cysouw 2005).

There are terminological issues here, insofar as not any anti-syntactic "leaner" was seen as qualifying for serious misfit status; additional criteria were imposed on "ditropic" clitics, to do with the nature of their morphosyntactic association and the categorial non-specificity of their phonological hosts.

Candidates under discussion included cross-referential pronouns, clause-chaining markers, and nominal determiners and relational markers; and they were a motley crew language-wise, appearing to be prized finds from one language or another, hidden under masses of supposedly well-behaved clitics in the same languages.

Still, generalisation for ditropics/leaners:

syntactically right-associated (if closely associated at all),
phonologically left-associated
– not the other way round.

Generalisations

- Do **all** languages group rhythmically rather than syntactically – at the lowest prosodic level, in ordinary, non-stylised speech – or at any rate allow rhythmic grouping as an option?

Probably not. Not so sure about rhythm not being an option, though.

- Prerequisite for rhythmic grouping (necessary, but not a sufficient condition: **lexical stress** (anchoring the rhythm)).
- Otherwise no really good predictor for rhythmic (vs. syntactic) grouping.
(Well, Gram – Lex order is another prerequisite of sorts, because in the case of Lex – Gram order, rhythmically induced mismatching with syntactic grouping wouldn't be recognised, owing to the trochaic/dactylic preference.)

- If grouping is rhythmic, which rhythm will be chosen?

Universal preference for **trochees/dactyls** (SW, SWW), rather than iambs/anapaests (WS, WWS).

PREposed grammatical/function words and/or PREFIXES (and indeed initial word-parts) can be left-attached in rhythmic phonological grouping, but POSTposed grammatical/function words and/or SUFFIXES (or final word-parts) are **not** phonologically right-attached.

Rarely, if ever (Tibeto-Burman?), the other way round.

(Our evidence thus confirms the suggestion of Hale & Selkirk 1987 that "invisible" function words can only phonologically associate leftwards, against the syntax, wrongly questioned by Elordieta 2008.)

This would follow from the Iambic/Trochaic Law if prosodic prominence in the languages concerned were a matter of intensity rather than quantity – which is probably correct.

Further consequence:

If univerbation is the mechanism for the creation of morphology, **suffixes** will be created from **preposed** (anti-syntactically encliticised) as well as from **postposed** grammatical words (encliticised along with the syntax) – which accounts for the universal suffixing preference.

Further evidence for universal trochaic/dactylic preference:

- nursery rhymes (Burling 1966)
- acquisition of iambic/anapaestic languages initially as if trochaic/dactylic: Hebrew, French, Catalan (Allen & Hawkins 1978, Fikkert & Santos 2006, Adam & Bat-El 2009)

- If there is rhythmic, anti-syntactic grouping, but it is only sporadic rather than language-pervasive, where is it most likely?
Answer: with clusters of grammatical words.

[Gram [Gram Lex]]

(Gram Gram) Lex

e.g., [Prep [Def N]]

(Prep Def) N

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