

Syncretism – Recurring Patterns

Johannes Hein & Philipp Weisser
HU Berlin & U Leipzig

December 2021

Abstract

In this paper we present and discuss different patterns of syncretism, understood to be morphological markers that have a common form but serve different functions. Our delineation of different syncretisms will largely be based on the theoretical concepts that have been employed to describe them. In this vein, we distinguish elsewhere syncretisms, natural class syncretisms based on cross-classification and sub-classification, directional syncretisms and morphomic syncretisms. The paper concludes with a discussion of the broader impact that the research on syncretism has on the architecture of grammar.

Keywords: syncretism, underspecification, decomposition, morpheme, elsewhere, natural classes

1 Introduction

The term syncretism in (inflectional) morphology refers to a situation in which an underlying morphosyntactic opposition (evidenced independently either on semantic grounds or overt opposition elsewhere in the language) fails to be overtly distinguished in the morphological surface forms (Baerman et al., 2005). Instead, the different members of the opposition all receive the same realization making this realization ambiguous between the different morphosyntactic functions. In other words, distinct morphosyntactic functions are mapped to the same morphological form. In the simplest case, the syncretism spans only two distinct functions. Consider the paradigm of subject agreement prefixes in Warembori, spoken in New Guinea, in (1) (Donohue, 1999).

(1) *Warembori subject agreement markers for class I*

	SG	PL
1. excl	i-	ami-
2	u- (a-)	mi-
3	i-	ti-

We can see that *i-* appears both in 1st and 3rd person agreement, thus it is syncretic for 1st and 3rd person singular as the same morphological form

is mapped to two distinct morphosyntactic (and in this case also semantic) functions, namely 1st and 3rd person. That 1st and 3rd person are indeed distinguished by the language's grammar is evidenced (besides their semantic difference) by the fact that they receive distinct exponence in the plural (*ami-/ki-* for 1st and *ti-* for 3rd person) and also in the singular of a different class of verbs (*ya-* for 1st and \emptyset - for 3rd person, not shown in (1)). That is, the expected distinction between 1st and 3rd person singular is neutralized in class I verbs and the morphological marker *i-* is ambiguous between a 1st and a 3rd person marking.

In this paper, we aim to systematize different types of syncretism and, in doing so, lay out the most common patterns of syncretism that we find in the world's languages.¹ Our typology of syncretism patterns will largely be based on the theoretical concepts that are typically used to describe them but we want to stress that the existence of the individual patterns is not specific to a theoretical background. Any adequate description of syncretism patterns will, in our view, need to make some distinction along the same lines.

We proceed as follows: Section 2 gives some background on the concept of syncretism. It sketches why we think syncretism patterns can be a diagnostic of underlying morphosyntactic (and morphosemantic) categories. Further it discusses the question of how we can distinguish between accidental homonymy and systematic instances of syncretism. Sections 3–6 introduce different types of syncretism and how we can identify, describe and model them. Section 7 then takes a step back and briefly sketches two conclusions about the architecture of grammar, which, we think, the study of syncretisms allows us to draw.

2 Some background on the concept of syncretism

The term *syncretism* in this (synchronic) sense as a one-to-many mapping between form and function was first used by Hjelmslev (1935–37, 60) and Jakobson (1936, 67) for Russian case markers that appear in more than one case and hence neutralize an underlying case distinction. We will come back to Russian declension in section 4.

The syncretism in Warembori above neutralizes distinctions of the category Person. However, syncretisms are attested in virtually every morphosyntactic category and combination of categories in the world's languages. A syncretism for case, for instance, is presented by Latin neuter nouns, which take the

¹Other attempts to classify syncretism patterns can be found in Stump (2001) and Kramer (2016).

same forms for accusative and nominative case (and dative and ablative case) (2) both in the singular and the plural (and across all declensions).

(2) Latin NOM=ACC syncretism

	bellum, n. 'war'	
	singular	plural
nom	bell-um	bell-a
acc	bell-um	bell-a
gen	bell-ī	bell-ōrum
dat	bell-ō	bell-īs
abl	bell-ō	bell-īs

An instance of gender syncretism can be found in the Northeast Caucasian language Karata, where in the plural the absolutive forms of the demonstrative *hadi-* 'that' are identical for masculine and feminine (3). In fact, gender syncretisms show a cross-linguistic affinity to plural contexts (Baerman et al., 2005) fits a general tendency for morphological distinctions to be neutralized in marked environments (see also the discussion in section 5).

(3) Karata MASC=FEM syncretism for 'that.ABS' (Magometbekova, 1967, 329; as cited in Baerman et al., 2005, 82)

	singular	plural
masc	hadiw	hadibaj
fem	hadij	hadibaj
neut	hadib	hadiraj

In Gothic, there is syncretism between dual and plural both in the pronominal and the verbal paradigm.

(4) Gothic DU=PL syncretism (Wright, 1930, 91, 120, 135; as cited in Baerman et al., 2005, 92)

	pronoun.NOM		verb 'take.PRS'	
	1st person	3rd person	1st person	2nd person
singular	ik	is	nima	nimiþ
dual	wit	eis	nimōs	nimand
plural	weis	eis	nimam	nimand

We also find syncretisms in tense/aspect systems. Take as an example the partial paradigm for the verb 'give' in the Otomanguean language Chichimeco, where in the second person singular the forms for anterior past, future, and

recent past are identical (5).

- (5) *Chichimeco tense syncretism in 2SG* (de Angulo, 1932, 165; as cited in Baerman et al., 2005, 101)

	ant. past	future	rec. past
1SG	tú-'e	gá-'è	kú-'e
2SG	kì-té	kì-té	kì-té
3SG	ù-ndé	gà-ndé	kù-ndé

Greek nominal inflection may serve as an example for syncretisms across inflection classes. The marker *-u* encoding genitive singular is identical for inflection classes I, V and VII (6).

- (6) *Greek inflection class syncretism* (Alexiadou and Müller, 2008, 119-120)

	I	V	VII
	anθrop _m 'man'	vun _n 'mountain'	spiti _n 'house'
nom.sg	anθrop-os	vun-o	spiti-∅
acc.sg	anθrop-o(n)	vun-o	spiti-∅
gen.sg	anθrop-u	vun-u	spitj-u
von.sg	anθrop-e	vun-o	spiti-∅

In general, there are two ways to approach syncretic forms. The first one is to simply assume two distinct affixes which are each mapped to one of the functions covered by the syncretism. For the Warembori paradigm in (1) this would entail positing two distinct prefixes i_1 - and i_2 - such that the former expones 1st person and the latter 3rd person. In this approach, the identity in form is a mere accidental homonymy. While this approach may be necessary for some syncretisms, it provides no deeper insight into the morphological system and is therefore often only pursued when the alternative approach seems untenable.² The alternative has it that syncretic forms constitute a single affix that appears in two distinct morphosyntactic environments. The heuristic that such an approach follows is provided in (7)

- (7) *Syncretism Principle* (Müller, 2005)
 Identity of form implies identity of function
 (within a certain domain, and unless there is evidence to the contrary).

²A very clear case of accidental homonymy seems to be presented by the English *-s* Affix which attaches to verbs in the 3rd person singular present indicative but encodes plural when it appears on nouns.

One consequence of this view is that syncretisms provide a window into the make-up of a language's morphological structure (or even cross-linguistically). The idea is that, for example, in a paradigm like the Latin one above, the nominative and the accusative are more closely related than, say, the nominative and the ablative.

In other words, if a syncretic form has only one function but occurs in two distinct cells in a paradigm, then these two cells must have something in common. Thus, syncretisms may help to uncover underlying relations between morphosyntactic categories/features. Syncretisms that are taken to instantiate the first approach are often called accidental syncretisms while those that fit the latter approach are termed systematic syncretisms.

Note that the syncretism principle in (7) is more of an analytic heuristic than an irrevocable principle of grammar. It seems plausible that a language learner, if presented with two identical exponents or forms in two minimally different grammatical configurations, will tend to posit that this is one and the same morpheme unless they have any evidence to the contrary. Thus, it seems reasonable to do the same from an analytical point of view.

Nonetheless, often it remains quite unclear whether a given case should be counted as accidental homonymy or as systematic syncretism and it must be admitted that, in practice, it often reduces to an analytical choice. Cases which lend themselves to straightforward accounts by means of theoretical concepts like underspecification or decomposition (which will be discussed below in more detail), will be analyzed as instances of systematic syncretism whereas cases that do not will often be treated as accidental.

Clearly, however, this is not a satisfying situation from a scientific viewpoint. Thus, some researchers have tried to produce diagnostics to distinguish between the two types. One straightforward way to make the distinction is to look how stable and pervasive a pattern of syncretism actually is. This entails looking at related paradigms, where the actual phonological form of the markers may differ from that of the original paradigm, to see whether they still are identical in the respective morphosyntactic functions. Consider the simple present tense paradigm from Standard German in (8), which contains two instances of syncretism. The first person plural and the third person plural receive the same form and so do the third singular and the second plural:

(8) Present Tense Conjugation of German *kaufen* ‘buy’:

	SG	PL
1	kauf-e	kauf-en
2	kauf-st	kauf-t
3	kauf-t	kauf-en

The standard accounts (see Bierwisch 1961; Wiese 1994; Wunderlich and Fabri 1995; Wunderlich 1996; Eisenberg 2000; Müller 2005) of this paradigm assume that the syncretism between first person plural and third person plural (both realized by the exponent */-en/*) is systematic as it is a pervasive property of German verbal inflection that these two contexts are expressed with the same form.

When looking at other contexts, we see that this syncretism holds in all paradigms of the language (different tenses, as evidenced by the past tense paradigm in (9), with modals (10) and even with the copula *sein*, see (11)). Further, it holds (to our knowledge) across all dialects of German (see e.g. the paradigm of Palatinate German in (12)).

(9) Past Tense:

	SG	PL
1	kauf-t-e	kauf-t-en
2	kauf-te-st	kauf-t-et
3	kauf-t-e	kauf-t-en

(11) Present Tense Copula:

	SG	PL
1	bin	sind
2	bist	seid
3	ist	sind

(10) Present Tense Modal Verb *müssen* (‘must’)

	SG	PL
1	muss	müss-en
2	muss-t	müss-t
3	muss	müss-en

(12) Present Tense of Palatinate German *kæ:fə* ‘buy’:

	SG	PL
1	kæ:f-∅	kæ:f-ən
2	kæ:f-f	kæ:f-ən
3	kæ:f-t	kæ:f-ən

The form identity between the third person singular and the second person plural on the other hand (in the paradigm in (8)) is typically treated as accidental (see Wiese 1994; Wunderlich and Fabri 1995; Wunderlich 1996; Eisenberg 2000)³ as it does not hold for the past tense in (9)), for modals (10) or the copula (11)). Further, the syncretism is frequently lost in German

³Note however, that this assumption is not shared by Fanselow and Frisch (2006); Müller (2005).

dialects as shown in the paradigm in (12), where the entire plural contexts is neutralized and expressed with the same form.

Another potential diagnostic that we want to mention comes from the resolution of syntactic feature conflicts under ellipsis, ATB-movement or Right Node Raising (Pullum and Zwicky (1986)). Pullum and Zwicky (1986) give the following minimal pairs from German:

- (13) a. *...weil ich das Haus und er den Garten kaufe/kauft.
 because I the house and he the garden buy.1SG/buy.3SG
 ‘...because we buy the house and the Muellers the garden.’
 b. ...weil wir das Haus und die Muellers den Garten kaufen.
 because we the house and the Muellers the garden buy
 ‘...because we buy the house and the Muellers the garden.’
 c. %...weil Franz das Haus und ihr den Garten kauft.
 because Franz the house and you(PL) the garden buy
 ‘...because Franz buys the house and you the garden.’
 Pullum and Zwicky (1986)

In all three configurations, we have a coordination of subjects with conflicting morphosyntactic features. In (13-a), we have a coordination of a first singular and a third singular subject. In (13-b), we have coordinated a first and a third plural subject and in (13-c), we have coordinated a third singular and a second person plural subject. As shown in the following table, the feature conflict in (13-a) actually results in a form conflict since a first person singular is expressed with a different form than a third person singular. The feature conflicts in (13-b) and (13-c) however do not.

Above, we mentioned that the syncretism between first person plural and third person plural is taken to be systematic due to its pervasiveness across related paradigms and other dialects. The syncretism between second person plural and third person singular is taken to be accidental. If that is on the right track, then the difference in terms of grammaticality in (13) could indicate that the possibility of feature resolution in coordination contexts can be used as a diagnostic for the distinction between accidental homonymy and systematic syncretism as well. Systematic instances of syncretism can “save” mismatches in feature resolution whereas accidental ones are less likely to do so.⁴

⁴It should be mentioned though that the judgments by Pullum and Zwicky (1986) have been doubted by Fanselow and Frisch (2006), who did not find substantial differences in terms of acceptability for configurations similar to (13-b) and (13-c).

3 Syncretism as a default pattern

A recurring intuition in virtually any systematic study of syncretism patterns is the concept of underspecification. In order for one single affix to be able to appear in more than one environment its function can be said to be underspecified (Jakobson, 1936; Bierwisch, 1967; Wurzel, 1987, 1998; Halle, 1994). That is, it does not express all features of both cells in which it appears but rather the common denominator of both cells, i.e. the features that those cells have in common. In the case of Warembori *i-* (1), one would probably say that its function is [singular] while it is unspecified for person. The affix *u-* on the other hand would be fully specified for [2nd person, singular]. This strategy is prevalent in many current theoretical approaches such as Distributed Morphology (Halle and Marantz, 1993, 1994; Noyer, 1992, 1997; Halle, 1997; Harley and Noyer, 1999; Embick, 2015), Paradigm Function Morphology (Stump, 2001, 2016), Network Morphology (Brown and Hippiusley, 2012), Minimalist Morphology (Wunderlich, 1996, 1997; Wunderlich and Fabri, 1995; Stiebels and Wunderlich, 1999) but it is by no means the only one. Syncretisms have also been successfully accounted for by paradigm geometry (Johnston, 1996; McCreight and Chvany, 1991; Plank, 1991; Postma, 1998; Gallmann, 2004), rules of referral (Zwicky, 1985; Corbett and Fraser, 1993; Stump, 2001), and very recently by overspecification and non-terminal spell-out in Nanosyntax (Starke, 2009; Caha, 2009, et seq.).

Underspecification typically gives rise to competition between different forms for one and the same morphological environment. Consider again the Warembori case from before. If we take *i-* to be underspecified for [singular] nothing precludes it from occurring in the 2nd person singular where it thus competes with the form *u-* which expresses [2nd person, singular]. One way to resolve this is to invoke an extrinsic or parochial ordering of the two forms such that *u-* takes precedence over *i-* (cf. Bierwisch, 1967; Wurzel, 1987, 1998; Halle, 1994). A more elegant alternative makes use of the fact that *u-* is more specific, i.e. specified for more morphosyntactic features, than *i-* and is therefore taken to block the latter in the competition (Kiparsky, 1973; Di Sciullo and Williams, 1987; Fanselow, 1991; Anderson, 1992; Lumsden, 1992; Noyer, 1992; Williams, 1994; Halle, 1997; Williams, 1997; Wiese, 1999; Stump, 2001, 2016). This intrinsic resolution of the competition is known as the *Specificity Principle*, *Blocking Principle*, *Elsewhere Principle*, or *Pāṇini's Principle* (15), and is adopted (where possible) in virtually every theoretical approach to syncretism that makes use of underspecification. Underspecification has often been captured by some version of the *Subset Principle* (14).

- (14) *Subset Principle*⁵
 An inflection marker F is combined with a stem S for a fully specified feature structure M iff the morpho-syntactic features of F are a subset of the morpho-syntactic features of M .
- (15) *Specificity Principle* (aka Blocking Principle, Elsewhere Principle, Pāṇini’s Principle)
 If more than one inflection marker satisfies the *Subset Principle*, the most specific one is chosen, where a marker F_i is more specific than a marker F_j iff F_i has more (relevant) morpho-syntactic features than F_j .

Besides accounting for syncretisms between cells that share a common feature, underspecification additionally provides a way to capture marker distributions that cover cells not sharing a common feature. It does so via postulation of one radically underspecified inflection marker, the elsewhere marker, which occupies all the cells of a paradigm for which no more specific marker is available. Consider the marker *are* in the present tense paradigm of the English copula. It occurs in the 2nd person in the singular but in all persons in the plural.

- (16) *Present tense of English copula ‘be’*

	singular	plural
1st person	am	are
2nd person	are	are
3rd person	is	are

There is no feature that is shared by all morphosyntactic contexts in which *are* appears. However, if we assume that *am* and *is* are specified as [1st person, singular] and [3rd person, singular] respectively, we can leave *are* without any specification, i.e. underspecified for both relevant features PERSON and NUMBER. According to the *Subset Principle* it will be compatible with all contexts (as the empty set is a subset of every set) but will be blocked by more specific *am* and *is* in 1st and 3rd person singular. Underspecification and competition resolution thus allows us to treat seemingly randomly distributed markers as systematically syncretic.

Underspecification has also been used to account for cases of optionality where two markers are equally grammatical in a single cell (cf. the 2nd person singular *u-* and *a-* in (1)). It is argued that if the two markers are

⁵The concrete version of the Subset Principle here is taken from [Hein \(2008\)](#), but the basic notion of this principle is found in all of the literature cited above.

equally specific, the *Specificity Principle* does not determine a winner and the grammar is free to choose either (Hein, 2008; Halpert, 2016; Driemel, 2018; Davis, to appear). On the other hand, it has been argued that in such a situation of indeterminacy, the grammar is unable to decide which form to select and the result is ineffability, i.e. none of the competing forms is judged completely grammatical (Coon and Keine, 2020).

4 Natural Class Syncretism

Despite its many virtues and wide-spread use, underspecification alone quickly reaches its limits. In fact, from its earliest application in Jakobson (1936) and Bierwisch (1967) it has been invoked in tandem with another concept: decomposition of morphosyntactic features. Consider the often discussed Russian declension in (17).⁶

(17) *Declension of Russian nouns*

	I	II	III	IV
	MASC	FEM, MASC	FEM	NEUT
NOM.SG	-∅	-a	-∅	-o
ACC.SG	-∅/-a	-u	-∅	-o
GEN.SG	-a	-i	-i	-a
LOC.SG	-e	-e	-i	-e
DAT.SG	-u	-e	-i	-u
INS.SG	-om	-oj	-ju	-om

There is an abundance of syncretic forms in this system, both across cases and across inflection classes. Take the *-e* marker of class II. It appears in both locative and dative case. Following the rationale in (7), this indicates that locative and dative share some common property, that is, they constitute a natural class of morphosyntactic specifications. Similarly, the syncretic *-i* in genitive, locative, and dative of class III points to a natural class comprising these cases. The same holds for nominative and accusative as is evident from the syncretic marker *-o* in class IV. The profound insight of Jakobson and Bierwisch was that natural classes of cases can be arrived at by ‘splitting’ the seemingly atomic case categories into a number of more primitive binary features [\pm subj(ect)], [\pm gov(erned)], [\pm obl(ique)] whose cross-classification gives rise to the difference observable cases.⁷ In conjunction

⁶*-ov* is realized as *-ej* after a [–back] consonant (Halle, 1994, 53ff.)

⁷In Jakobson’s (1936) original conception, there were three semantically-based features. However, it has been severely modified by subsequent researchers. Bierwisch (1967) and

with underspecification, syncretic markers can then be specified for a subset of those primitive features which makes them compatible with the natural class of cases defined by this subset. The concrete decomposition of cases for Russian in (18) is provided in Müller (2004) who also argues that inflection classes may be decomposed in a similar way (cf. Müller, 2005; Alexiadou and Müller, 2008), although the primitive class features arguably are of a purely formal nature lacking any semantic or syntactic grounding.⁸

- (18) *Decomposition of cases in Russian* (Müller, 2004)
- | | |
|---------------|---------------------|
| nominative: | [+subj, -gov, -obl] |
| accusative: | [-subj, +gov, -obl] |
| genitive: | [+subj, +gov, +obl] |
| locative: | [-subj, -gov, +obl] |
| dative: | [-subj, +gov, +obl] |
| instrumental: | [+subj, -gov, +obl] |

Ignoring the inflection class features, the specifications for the abovementioned markers *-e*, *-i*, and *-o* are given in (19) using the format common to Distributed Morphology.

- (19) *Specification of some syncretic Russian case markers*
- | | | |
|------|---|---------------|
| /-e/ | ↔ | [-subj, +obl] |
| /-i/ | ↔ | [+obl] |
| /-o/ | ↔ | [-obl] |

As the reader may verify, *-e* is compatible with the natural class comprising locative and dative. *-i* is compatible with the natural class containing all oblique cases, i.e. genitive, locative, dative, and instrumental. It is blocked from appearing in the instrumental by the more specific marker *-ju* [+subj, -gov, +obl]. *-o* is compatible with all non-obliques, that is nominative and accusative.

This strategy of decomposition and underspecification has successfully been applied to a variety of different patterns of syncretism, not only in case paradigms, but also in number, gender, person, and others.⁹ Take our Warembori syncretism of the marker *i-* from the beginning. We argued that if *i-* is underspecified for person this accounts for its distribution. An alternative

Wiese (2003) use the features also employed here and locate their basis in syntax.

⁸See Caha (2020) and Privizentseva (2020) for different accounts of across-class syncretisms in Russian.

⁹Syncretism patterns that can be resolved under recourse to natural classes alone (cross-classifying or sub-classifying) can, following Stump (2001), be termed *unstipulated syncretism*.

strategy would be to decompose atomic person features into combinations of more primitive $[\pm 1, \pm 2]$ features such that 1st person is $[+1, -2]$, 2nd person is $[-1, +2]$, and 3rd person is $[-1, -2]$. 1st and 3rd person in this system form a natural class for the feature $[-2]$. Specifying *i-* for exactly this feature also accounts for its distribution. The difference to the first approach lies in the lack of competition with *u-* for the 2nd person cell as *i-* is incompatible with a $[+2]$ context.

There is also another way of including the fundamental idea of feature decomposition into theoretical accounts of syncretism that has gained traction in the past decade. Rather than being a cross-classification of the primitive features, cases are a sub-classification (Johnston, 1996; Caha, 2009), that is, primitive features cumulate one by one to generate the various case categories. For the six Russian cases, such a classification could look like (20).

(20) *Sub-classification of cases in Russian*

NOM	=	[A]
ACC	=	[A, B]
GEN	=	[A, B, C]
LOC	=	[A, B, C, D]
DAT	=	[A, B, C, D, E]
INS	=	[A, B, C, D, E, F]

In this system, the specification of the accusative contains that of the nominative, the specification of the genitive contains that of the accusative and the nominative, and so on. The specification of the instrumental finally contains the specifications of all other cases. In a sense, the case are built on each other and therefore ordered. As a consequence of this make-up, natural classes defined by (one or more of) the primitive features may only cover contiguous cases and necessarily include the instrumental. When coupled with under-specification and some version of the *Specificity Principle*, this containment model precludes syncretisms of cases that are not contiguous. Consider a hypothetical marker *-x* [A, B]. All else being equal, we would expect it to appear in all cases between and including accusative to instrumental. In order for another marker *-y* to appear with any case inbetween those two, say locative, it would have to be specified as [A, B, C, D], compete with *-x* for marking the locative and win by being more specific. However, this specification also fits the dative and instrumental where, by virtue of being more specific, *-y* takes precedence over *-x*. Thus, any identity of forms in non-contiguous cases must be accidental homonymy and not a systematic instance of syncretism. Containment is therefore well-suited to account for the observation illustrated in (21) that, given a specific arrangement of cases,

syncretisms in Russian declension target contiguous cells only (McCreight and Chvany, 1991; Johnston, 1996; Caha, 2009).

(21) *Contiguous case syncretisms in Russian* (Caha, 2009, 13)

	‘table’, pl.	‘student’, sg.	‘we’	‘bridge’, sg.	‘good’, f.sg.
NOM	stol-y	student-∅	my	most-∅	xoroš-aja
ACC	stol-y	student-a	na-s	most-∅	xoroš-uju
GEN	stol-ov	student-a	na-s	most-a	xoroš-ej
LOC	stol-ax	student-e	na-s	most-u	xoroš-ej
DAT	stol-am	student-u	na-m	most-u	xoroš-ej
INS	stol-ami	student-om	na-mi	most-om	xoroš-ej

In fact, as Caha (2009) has demonstrated in some detail, there seems to be a universal case containment such that syncretism patterns in a variety of languages target only contiguous cases (cf. Zompì, 2017; Smith et al., 2019). Similar patterns of contiguity have also been uncovered in domains other than case, e.g. comparison (Bobaljik, 2012), complementizers (Baunaz and Lander, 2018), and ontological categories (Baunaz and Lander, 2019). The observation that syncretism only targets neighbouring cells has become known as the *ABA generalization.

A further pattern that is nicely accounted for by sub-classification of features are overt cumulations of exponents as observable, for instance, in Tok Pisin pronouns (22) or Czech comparison (26).

(22) *Overt cumulation in Tok Pisin pronouns*

Person	SG	PL	DL
1 Inkl.	–	yu-mi-pela	yu-mi-tu-pela
1 Exkl.	mi	mi-pela	mi-tu-pela
2	yu	yu-pela	yu-tu-pela
3	em	ol	(∅-)tu-pela

Tok Pisin distinguishes three numbers in pronouns: singular, plural and dual. Interestingly, in 1st person exclusive and 2nd person the plural pronoun is built upon the form of the singular pronoun (*mi*, *yu*) by adding a suffix *-pela*. In turn, the dual form is obtained by adding a further marker *-tu-* inbetween the two. Putting aside the linear order for expository purposes here, this cumulative build-up of forms can be accounted for if the specification of the dual contains that of the plural which again contains that of the singular as visualized in (23).¹⁰

¹⁰Similarly, the forms for 1st person inclusive seem to be made up of the basic (singular)

(23) *Sub-classification of number in Tok Pisin*

SG	=	[A]
PL	=	[A, B]
DU	=	[A, B, C]

The specification of the respective markers, in contrast to syncretic markers as found in the Russian case system, would refer to only one of the features. The portmanteau forms in 3rd person exceptionally refer to more than one feature (24).

(24) *Specification of Tok Pisin pronominal number markers*

/ol/	↔	[3rd Person, A, B]
/-mi/	↔	[1st Person excl, A]
/em/	↔	[3rd Person, A]
/-yu/	↔	[2nd Person, A]
/-pela/	↔	[B]
/-tu-/	↔	[C]
/∅/	↔	[A]

Comparison in Czech adjectives provides a similar pattern.¹¹ The comparative forms of adjectives are built by suffixation with a comparative marker *-ší*. The superlative form, in turn, is obtained by adding a prefix *nej-* to the comparative form.

(25) *Overt cumulation in Czech comparison* (Bobaljik, 2012; De Clercq and Vanden Wyngaerd, 2017)

POS	CMPR	SPRL	
mladý	mlad-ší	nej-mlad-ší	‘young’
starý	star-ší	nej-star-ší	‘old’
tvrďý	tvrď-ší	nej-tvrď-ší	‘hard’
drahý	draž-ší	nej-draž-ší	‘expensive’

This cumulation of forms has been taken as evidence for an underlying

forms for 1st person exclusive and 2nd person plus the respective number markers. This may suggest that 1st person inclusive is made up of the specification for 1st and 2nd person simultaneously. A general sub-classification for person, however, turns out to be more involved as 2nd person does not seem to contain 1st person and 3rd person does not seem to contain 2nd and 1st person here.

¹¹Czech comparison shows additional, more involved patterns that have been argued to justify a decomposition of the simple CMPR and SPRL features assumed here. For details, the reader is referred to De Clercq and Vanden Wyngaerd (2017) and Čaha et al. (2019), where it is also argued that comparative *-ší* can be further decomposed into *š* and *í*.

syntactic structure in which the comparative contains the positive and is in turn contained by the superlative (Bobaljik, 2012). It can, however, also be captured by assuming a featural sub-classification along the lines of (26) with the respective markers referring to only a subset (27).

- (26) *Sub-classification of comparison in Czech*
 POS = [A]
 CMPR = [A, B]
 SPRL = [A, B, C]
- (27) *Specification of Czech comparative and superlative markers*
 /-ší/ ↔ [B]
 /nej-/ ↔ [C]

5 Directional Syncretism

The next type of syncretism that we want to discuss is often referred to as *Directional Syncretism*, which is a term introduced in Stump (2001, 212ff). It describes instances of syncretism for which we have independent reasons to believe that one member of the syncretic pair asymmetrically determines the form of the other. In (28), we see a straightforward example of a directional syncretism, the paradigm of masculine nouns from Russian in (28) (taken from Müller 2004). In this paradigm, The distinction between nominative and accusative is lost with inanimate nouns. The syncretic form is determined by the typical exponent for the nominative, which seems to spread into the accusative (hence, the term *directional*). The result is an L-shape that is typical for directional syncretism patterns.

(28) *Directional syncretism in Russian masculine nouns*

	<i>žitel</i> ('inhabitant')	<i>student</i>	<i>zavod</i> ('factory')
NOM	žitel-∅	student-∅	zavod-∅
ACC	žitel-ja	student-a	zavod-∅

All the nouns of this declension exhibit an animacy effect where the distinction of nominative and accusative is lost with inanimate nouns. And, crucially, we can see straightforwardly that the exponent of the syncretic case is identical to the nominative one in the paradigms which do show an opposition. In other words, the nominative form is the determinant member of the syncretic pair whereas the accusative is the dependent member.

An example from the verbal domain comes from Stump's discussion of syncretism in Bulgarian. In Bulgarian, the 3rd singular is marked with an

/-e/-exponent throughout all tense/aspect combinations. The 2nd singular is distinguished from the 3rd singular in the present tense but this distinction is lost in the aorist and the imperfect in favour of the 3rd singular.

(29) Directional syncretism in Bulgarian verbs

	Present	Aorist	Imperfect
2SG	krad-ěš	krád-e	kraděš-e
3SG	krad-é	krád-e	kraděš-e

The directional nature of these instances of syncretism is usually directly translated into the theoretical analyses. Zwicky (1985, 1990) and Stump (1993, 2001) have advocated the concept of *Rules of Referral*, which, quite literally, refer the realization of a specific morphosyntactic feature combination to a different one. For the directional syncretism in the verbal domain, (Stump, 2001, 46) gives the informal rule in (30):

- (30) Rule of Referral (informal version):
 In the preterite tenses, a verb's 2sg forms are inflected however its 3sg forms are inflected.

Such rules, if unconstrained, are of course quite powerful and thus, a number of attempts have been made to limit the potential of these rules. One particularly promising attempt is to constrain such rules in terms of featural markedness. It is based on the general observation that, in the vast majority of the cases, the referral is from a more marked combination of morphosyntactic features to a less marked one. In combination with a theory of featural markedness, it is thus possible to derive many instances of directional syncretism as deletion of features rather than as a brute-force referral. This concept is typically referred to as impoverishment (see e.g. Bonet 1991; Noyer 1992, 1997; Halle and Marantz 1993, 1994; Halle 1997; Bobaljik 2002; Frampton 2002; Keine and Müller 2008, 2021; Arregi and Nevins 2012).

The rule of referral used to model the directional syncretism in our Bulgarian example in (30) could also be replaced with an impoverishment rule. If we assumed for a minute that 2SG is distinguished from 3SG by the feature [participant], then the impoverishment rule could look like (31):

- (31) Impoverishment rule (informal version):
 Delete the feature [participant] in preterite tenses.

The result will be that subsequent realization rules cannot refer to a [participant]-feature anymore and all combinations of morphosyntactic features involving a second person will be realized by the exponent for 3SG, which is, in this case

morphologically speaking less marked as it is not specified for [participant]. Crucially, impoverishment can only ever delete features in a given environment and therefore, it would, all else being equal, not be possible with these types of rules to model the reverse situation: a case where a 3rd person singular is expressed by a 2nd singular exponent. We thus see that impoverishment rules are significantly less powerful than rules of referral.¹²

6 Morphomic Syncretism

The final pattern of syncretism we want to discuss and certainly the most mysterious one is morphomic syncretism. The term ‘morphome’ goes back to [Aronoff \(1994\)](#) and refers to a situation in which we find a systematic pattern of syncretism of morphological forms which are not associated with a common natural class of morphosyntactic or semantic features (see [Herce 2019](#) for a similar definition and [Aronoff 1994](#); [O’Neill 2011](#); [Round 2013](#); [Trommer 2016](#); [Maiden 2018](#); [Herce 2019](#) for discussions of the concept).¹³

The classical example of morphomic syncretism comes from [Aronoff \(1994\)](#) and concerns the complete identity of the passive and the perfect participle in languages like English. Aronoff stresses that these two uses have nothing in common semantically or syntactically (as one can, for example, see from the fact that one absorbs nominative case whereas the other one does not). And even though the two configurations do not seem to share any features, there is a complete identity for every verb in the language. And, crucially, it is also highly implausible that we are dealing with accidental homophony in these cases because it is not just the identity of a single affix. As any well-behaved Indo-European language, English has many irregular verbs, many of which form their participles with irregular affixes, ablaut or null-affixes or different combinations of them (e.g., *drawn*, *sent*, *sung* or *cut*). And nonetheless, for each and everyone of these verbs, the passive and the perfect participle is identical. Aronoff takes patterns like these to show that there is a morphomic

¹²Such restrictions of course often come with the price that occasionally a pattern seems problematic for impoverishment-based analyses. One notable case are what [Stump \(2001\)](#) calls bidirectional syncretism patterns. In these cases, differences between two morphosyntactic categories X and Y are neutralized in some contexts as well but crucially, the direction of syncretism is flexible. In some cases, the typical marker for X is used and in some the typical marker for Y. Such syncretism patterns can be problematic for markedness-based impoverishment since one would have to say that the relative markedness of X and Y is flexible as well.

¹³The literature has proposed different classifications of morphomic syncretism patterns (see e.g. [Round’s \(2013\)](#) distinction in rhizomorphomes, meromorphomes and metamorphomes).

level of structure, a level in which differences in the underlying syntax are neutralized to receive a single form or in which specific features which are only relevant for morphology are introduced (e.g. inflection classes).

Much of the literature on morphemes has focussed on English and Romance languages but of course, morphomic patterns are not limited to these languages but are found all over the world. Consider the paradigm of gender-based verbal inflection in Burmeso in (32). The actual agreement forms for the specific classes show a lot of syncretism but their distribution is very intricate. We can see that animate plurals seem to receive the /s/-marker for class 1 verbs and the t-marker for class 2 verbs but it is not straightforwardly possible to capture the distribution of the markers by means of underspecification or decomposition. And given that the pattern is, on an abstract level, exactly the same for both verb classes, it also seems quite implausible to dismiss this kind of syncretism as accidental. The verbal agreement in Burmeso seems to follow a systematic pattern but none that we can model with our limited toolset at this point.

(32) *Burmeso verbal inflection* (Donohue, 2001, 100,102; Corbett, 2015, 162)

GENDER	ASSIGNMENT	CLASS1 'see'		class2 'bite'	
		SG	PL	SG	PL
I	male	j-ih-	s-ih-	b-akwa-	t-akwa-
II	female, animate	g-ih-	s-ih-	n-akwa-	t-akwa-
III	miscellaneous	g-ih-	j-ih-	n-akwa-	b-akwa-
IV	mass nouns	j-ih-	j-ih-	b-akwa-	b-akwa-
V	banana, sago tree	j-ih-	g-ih-	b-akwa-	n-akwa-
VI	arrows, coconuts	g-ih-	g-ih-	n-akwa-	n-akwa-

As a final example of a morphomic syncretism pattern consider the Finno-Ugric language Udmurt, where the same morpheme is used as the accusative case marker (33-a), as a marker signalling a third person possessor on a noun (33-b) as well as a nominalizing suffix (33-c). And while the different uses of the morpheme are historically related, they presumably do not form a natural class of morphosyntactic or semantic features as these functions are very different. And as in the other cases above, it seems quite implausible to dismiss this as an accident since the syncretism also extends to the various allomorphs of this morpheme.

- (33) a. mon kńiga-jez liddž-i
 1SG book-ACC read-PST.1SG
 ‘I read this book.’ (Winkler, 2011, 67) (adapted)
- b. pi-je-len kišno-jez
 son-1SG.POSS-GEN wife-3SG.POSS
 ‘my son’s wife,’ (Winkler, 2011, 65) (adapted)
- c. vuza-no-jez
 sell-PTCP-NLMZ
 ‘that (thing) which is for sale’ (Winkler, 2011, 30) (adapted)

As Trommer (2016) notes, some morphomic patterns are technically derivable simply by means of radical underspecification. In principle, it would be logically possible to assume that the syncretism of these different categories is due to a radically underspecified marker that appears in the three, seemingly unrelated, environments. However, upon closer inspection, it soon becomes clear that such an analysis is hardly plausible for patterns like the Udmurt one above. In its use as an accusative case marker, for example, the morpheme is marked compared to a – phonologically, morphologically, and syntactically – unmarked nominative case marker. Similarly, it makes little sense to treat a nominalized verb form as the default.

Thus, morphomic syncretism patterns are evidence that natural language allows, at least in some cases, for features that are purely morphological in nature and that have no grounding in either syntax or semantics. The category *participle*, for example, was invented for the purpose to refer to a common morphological form used in a diverse set of unrelated syntactic environments.

Morphosyntactic analyses of various frameworks have incorporated this finding into their theories more or less directly. As Trommer (2016) shows, the respective implementations of morphomic syncretism patterns in Paradigm Function Morphology (Stump 2001, 2016), Network Morphology (Brown and Hippisley 2012) and Distributed Morphology (Trommer 2016) differ only in minor details and they all have in common that they introduce an additional level of featural abstraction that realization rules can refer to. Using the formalism used in Trommer (2016), we could thus say for the Udmurt morpheme that we introduce a morphomic feature [X] into our analysis and that this feature is inserted into the three disjoint syntactic environments (i.e., in accusative, third person possessor or nominalized contexts). Subsequently, realization rules will then refer to the morphomic feature X rather than to the syntactic features directly. In other words, the feature [X] functions as a sort of middle man that combines different syntacto-semantic contexts and results in a coherent realization.

7 What Syncretism tells us about the architecture of grammar

In the previous sections, we have seen some syncretism patterns and for each of them, we have taken a very brief look at the grammatical concepts that can explain them. In this short section, we will illustrate how the study of syncretism can inform our understanding of the architecture of grammar from a broader perspective. We will discuss two arguments which build on the discussion above to show that the study of syncretism can have far-reaching consequences beyond the concrete study of specific words or word forms.

The first argument goes, to our knowledge, back to [Stump \(2001\)](#) and concerns the question of what the relation of specific morphemes to their semantic content is (for the same argument, see also [Bobaljik \(2017\)](#) on the basis of Russian and [Kalin and Weisser t.a.](#) on the basis of Turoyo). Do morphemes actually contribute semantic features to a stem when they are affixed to it or do they merely realize semantic information that is independently given? This distinction is typically referred to as the difference between incremental and realizational theories of morphology (see [Stump 2001](#)). In an incremental theory, each instance of an affixation step adds new information to the derived word form whereas in a realizational theory, the individual morphemes only realize or expone the semantic features but do not contribute any features themselves. Thus, in an incremental theory, the /s/ in *cats* means plural and contributes a plural feature to the whole word, which it would otherwise not have. But in a realizational theory, the /s/ is merely associated with the meaning plural and occurs when the feature is present.

And while a simple and straightforward incremental theory certainly has its appeal, it can be shown to be empirically less adequate. In Section 2, we saw that virtually all current theories of inflectional morphology make use of underspecification and competition to capture patterns of syncretism. However, it turns out that underspecification and competition require a realizational model. Consider the example of Warembori from Section 1 again. With verbs of class 1, we encountered a syncretism of first and third person singular.

(34) *Warembori subject agreement markers for class I*

Class I	
1sg	i-
2sg	u-
3sg	i-

Suppose now that we pursue an incremental theory and try to combine this with an underspecification approach. In line with what we said in Section 2, we would thus say that /u-/ contributes the features [2SG] to the verb form whereas the /i-/ would only contribute [SG]. This would predict however, that verbs prefixed with /i-/ in the language would not have a person specification. As a result, they should be licensed in all singular contexts including a second person singular context. This is of course not the correct result. The problem is that, in an incremental approach, underspecification cannot be readily employed. We want the final word form to be fully specified since we need the full specification to check whether a given word form is licensed in a syntactic context or not. But when the affixes themselves contribute the features to the final word form, there is no way the affixes themselves can be underspecified. We thus conclude that a realizational model seems to be empirically more adequate.

The second question that we want to briefly delve into concerns the interface between syntax and morphology. Is morphology building words that the syntax subsequently arranges or is morphology a response to the syntactic structure created before? This distinction is typically referred to as the distinction between early-insertion and late-insertion models of morphology. In early insertion models, words are built in a presyntactic component and the resulting words carry all morphosyntactic features that will be licensed in the syntax subsequently. In late-insertion models, the syntax generates abstract structures and a postsyntactic morphophonological component will subsequently fill these structures with the actual exponents.

Both types of models have been proposed and as it turns out, many solutions to morphological problems can be transferred straightforwardly from one model to another. However, we want to submit that a subset of morphomic patterns discussed in Section 5 turns out to be quite problematic for Early-Insertion models.¹⁴ To be more precise, we would like to argue that an Early-Insertion model faces problems when a syncretism pattern is negatively defined over different syntactic environments. The clearest cases of such phenomena come from instances of default agreement. Consider verbal default agreement in a language like Finnish for example. Finnish, like many other languages, shows third person singular agreement in a variety of different syntactic configurations: When the subject bears a case other than nominative (as in (35-a)); with clausal subjects (as in (35-b) in some existential constructions (as in (35-c)); with some indefinite subjects (as in (35-d)) and with passive constructions (as in (35-e)).¹⁵

¹⁴See [López \(2007\)](#) and [Preminger \(2011\)](#) for the same argument on the basis of Icelandic.

¹⁵The standard literature does not gloss passive/impersonal constructions as involving

- (35) a. Minu-lla o-n sinu-t.
 I-ADESS be-3SG you-ACC
 ‘I have you.’ Kiparsky (2001)
- b. Ymmärtä-ä o-n anta-a antee-ksi.
 understand-INF be-3SG give-INF pardon-TRANSL
 ‘To understand is to forgive.’
- c. Nyt tule-e uutise-t.
 Now come-3SG news-NOM.PL
 ‘Now there comes the news.’
- d. Liisa-lle synty-i kaksose-t.
 Lisa-ALLAT be.born-PST.3SG twin-NOM.PL
 ‘Twins were born (to Liisa).’ Kiparsky (2001)
- e. Minu-a rakaste-ta-an.
 1SG-PART love-PASS-3SG
 ‘I am being loved’

And while these diverse syntactic environments do not constitute a natural class, they do have something in common, namely that syntactic agreement with the subject has failed for some reason, either because they bear the wrong case (as in (35-a)), or because it does not bear phi-features (as in (35-b)), or because it is in the wrong syntactic position (as in (35-c,d)). In other words, the context of the default exponent is only negatively specified: It occurs when the agreement head does not find a target for agreement.

We can derive this straightforwardly in a Late-Insertion model: Using a valuation-based model of syntactic agreement, we can say that the operation that is responsible for the transfer of features can fail without fatal consequences (see López 2007; Preminger 2011). If the transfer of features will be unsuccessful, the verb will simply have no features and thus the morphological elsewhere exponent will be used. For Finnish, this is quite plausible since the third person singular exponent also seems to be morphologically and phonologically unmarked in the vast majority of the cases.

In an Early-Insertion model, this turns out to be much more tricky. Here, we would build the relevant verbs with a specification for third person singular. Crucially, this specification will need to be licensed by the syntactic configuration (i.e., the feature needs to be checked by a licenser with the right features). The point is, however, that in the configuration (35-a–e), there is, for all we know, nothing that could license a third person singular morpheme. We clearly cannot say that the 3rd person singular morphology requires no

a 3rd person singular marking but see e.g. (Nelson, 1998, 49) for arguments that the impersonal/passive suffix -TAAN actually consists of two morphemes of which the latter is the third person suffix.

licensor because it is not licensed in configurations with second person or plural subjects. The only solution might potentially be to stipulate that 3rd person singular morphology can be licensed by an agreement head that does not have any features for whatever reason. But we do not see how this can be formally implemented in a straightforward way or even why the third person singular morpheme should be treated as so special as to require a different checking mechanism.

Thus, we would like to argue that these kinds of syncretism patterns are indicative of the architecture of grammar inasmuch as they support (a) a realizational model of morphology and (b) a Late-Insertion model of the syntax-morphology interface.

8 Conclusion

In this short paper, we examined different types of syncretism patterns and briefly discussed the typical mechanisms that are employed to explain the distribution of the respective markers. Throughout the technical discussion, we kept the discussion theory-independent as we restricted ourselves to the tools that are employed across many different frameworks such as underspecification, feature decomposition, rules of referral (or impoverishment rules) and the assumption morphomic features. Finally, in Section 7, we broadened our perspective and briefly discussed two arguments from the literature that indicated that the study of syncretism can also inform our understanding of morphological theory and architecture of grammar in general.

References

- Alexiadou, Artemis and Gereon Müller (2008): Class features as probes. *In*: A. Bachrach and A. Nevins, eds, *Inflectional Identity*. Oxford University Press, Oxford, pp. 101–155.
- Anderson, Stephen (1992): *A-Morphous Morphology*. Cambridge University Press, Cambridge.
- Aronoff, Mark (1994): *Morphology by itself: stems and inflectional classes*. MIT Press, Cambridge, MA.
- Arregi, Karlos and Andrew Nevins (2012): *Morphotactics: Basque auxiliaries and the structure of spellout*. Springer, Dordrecht.

- Baerman, Matthew, Dunstan Brown and Greville G. Corbett (2005): *The Syntax-Morphology Interface*. Vol. 109 of *Cambridge Studies in Linguistics*, Cambridge University Press, Cambridge.
- Baunaz, Lena and Eric Lander (2018): ‘Deconstructing categories syncretic with the nominal complementizer’, *Glossa* **3**, 1–27.
- Baunaz, Lena and Eric Lander (2019): *Ontological categories*. lingbuzz/003993.
- Bierwisch, Manfred (1961): Zur Morphologie des deutschen Verbalsystems. PhD thesis, Karl-Marx-Universität Leipzig.
- Bierwisch, Manfred (1967): Syntactic Features in Morphology: General Problems of So-Called Pronominal Inflection in German. In: *To Honour Roman Jakobson*. Mouton, The Hague/Paris, pp. 239–270.
- Bobaljik, Jonathan (2002): ‘A-chains at the PF-interface: Copies and covert movement’, *Natural Language and Linguistic Theory* **20**, 197–267.
- Bobaljik, Jonathan (2012): *Universals in Comparative Morphology*. MIT Press, Cambridge, MA.
- Bobaljik, Jonathan (2017): ‘Distributed Morphology’, <https://oxfordre.com/linguistics>.
- Bonet, Eulalia (1991): Morphology after syntax: Pronominal clitics in Romance. PhD thesis, MIT, Cambridge, MA.
- Brown, Dunstan and Andrew Hippisley (2012): *Network Morphology*. Cambridge University Press, Cambridge.
- Caha, Pavel (2009): The Nanosyntax of Case. PhD thesis, University of Tromsø.
- Caha, Pavel (2020): Modeling declensions without declension features. available at LingBuzz.
URL: <https://ling.auf.net/lingbuzz/005537>
- Caha, Pavel, Karen De Clercq and Guido Vanden Wyngaerd (2019): ‘The fine structure of the comparative’, *Studia Linguistica* **73**(3), 470–521.
- Coon, Jessica and Stefan Keine (2020): ‘Feature gluttony’, *Linguistic Inquiry* **Early access**, 1–56.

- Corbett, Greville (2015): *Gender*. Cambridge University Press.
- Corbett, Greville and Norman Fraser (1993): ‘Network Morphology: A DATR Account of Russian Nominal Inflection’, *Journal of Linguistics* **29**, 113–142.
- Davis, Colin (to appear): ‘Case-driven plural suppletion in Barguzin Buryat: On case structure, suppletion typology, and morphological competition’, *Glossa* .
- de Angulo, Jaime (1932): ‘The Chichimeco language (Central Mexico)’, *International Journal of American Linguistics* **7**, 152–194.
- De Clercq, Karen and Guido Vanden Wyngaerd (2017): ‘*ABA revisited: Evidence from Czech and Latin degree morphology’, *Glossa* **2**(1), 69.1–32.
- Di Sciullo, Anna Maria and Edwin Williams (1987): *On the Definition of Word*. MIT Press, Cambridge, MA.
- Donohue, Mark (1999): *Warembori*. Vol. 341 of *Languages of the World/Materials*, Lincom Europa, München.
- Donohue, Mark (2001): Animacy, Class and Gender in Burmeso. In: *The Boy from Bundaberg: Studies in Melanesian Linguistics in Honour of Tom Dutton*. Canberra Pacific Linguistics, Canberra, pp. 97–115.
- Driemel, Imke (2018): Person Mismatch Agreement. In: S. Hucklebridge and M. Nelson, eds, *Proceedings of NELS 48*. GLSA, Amherst, MA.
- Eisenberg, Peter (2000): ‘Grundriss der deutschen Grammatik: Band 1: Das Wort’.
- Embick, David (2015): *The Morpheme: A Theoretical Introduction*. De Gruyter Mouton, Boston/Berlin.
- Fanselow, Gisbert (1991): *Minimale Syntax*. Habilitationsschrift, Universität Passau.
- Fanselow, Gisbert and Stefan Frisch (2006): Effects of Processing Difficulty on Judgements of Acceptability. In: G. Fanselow, C. Féry, M. Schlesewsky and R. Vogel, eds, *Gradience in Grammar: Generative Perspectives*. Oxford University Press, Oxford.
- Frampton, John (2002): Syncretism, Impoverishment, and the Structure of Person Features. In: M. Andronis, E. Debenport, A. Pycha and K. Yoshimura, eds, *Papers from the Chicago Linguistics Society Meeting*. Vol. 38, University of Chicago, Chicago, pp. 207–222.

- Gallmann, Peter (2004): Feature Sharing in DPs. *In*: G. Müller, L. Gunkel and G. Zifonun, eds, *Explorations in Nominal Inflection*. Mouton de Gruyter, Berlin, pp. 121–160.
- Halle, Morris (1994): The Russian declension: An illustration of the Theory of Distributed Morphology. *In*: J. Cole and C. Kisseberth, eds, *Perspectives in Phonology*. CSLI Publications, Stanford, CA, pp. 29–60.
- Halle, Morris (1997): Distributed morphology: Impoverishment and fission. *In*: B. Bruening, Y. Kang and M. McGinnis, eds, *Papers at the Interface*. Vol. 30 of *MIT Working Papers in Linguistics*, MITWPL, Cambridge, Mass., pp. 425–449.
- Halle, Morris and Alec Marantz (1993): Distributed Morphology and the Pieces of Inflection. *In*: K. Hale and S. J. Keyser, eds, *The View from Building 20*. MIT Press, Cambridge Massachusetts, pp. 111–176.
- Halle, Morris and Alec Marantz (1994): Some key features of Distributed Morphology. *In*: A. Carnie, H. Harley and T. Bures, eds, *Papers on Phonology and Morphology*. Vol. 21 of *MIT Working Papers in Linguistics*, MITWPL, Cambridge, Mass., pp. 275–288.
- Halpert, Claire (2016): *Argument Licensing and Agreement*. Oxford University Press, Oxford.
- Harley, Heidi and Rolf Noyer (1999): ‘Distributed Morphology’, *GLOT International* 4(4), 3–7.
- Hein, Johannes (2008): Verbflexion im Warembori: Eine Analyse im Rahmen der Distributierten Morphologie. *In*: F. Heck, G. Müller and J. Trommer, eds, *Varieties of Competition*. Vol. 87 of *Linguistische Arbeits Berichte (LAB)*, Universität Leipzig, Leipzig, pp. 49–63.
- Herce, Borja (2019): ‘Morphomic Interactions’, *Morphology* 29, 109–132.
- Hjelmslev, Louis (1935–37): *La catégorie des cas: étude de grammaire générale*. Acta Jutlandica VII/1, Universitetsforlaget, Aarhus.
- Jakobson, Roman (1936): Beitrag zur allgemeinen Kasuslehre. Gesamtbedeutungen der russischen Kasus. In: Reprinted 1971 in *Selected Writings*. Vol. 2: Word and language, Mouton, The Hague/Paris, pp. 23–71.
- Johnston, Jason (1996): Systematic Homonymy and the Structure of Morphological Categories. PhD thesis, University of Sydney, Sydney.

- Kalin, Laura and Philipp Weisser (t.a.): Minimalism, morphology and the lexicon: Then and now. *In*: K. Grohmann and E. Leivada, eds, *Cambridge Handbook of Minimalism*. Cambridge University Press, Cambridge.
- Keine, Stefan and Gereon Müller (2008): Differential argument encoding by impoverishment. *In*: M. Richards and A. Malchukov, eds, *Scales*. Vol. 86 of *Linguistische Arbeits Berichte*, Universität Leipzig, pp. 83–136.
- Keine, Stefan and Gereon Müller (2021): Impoverishment. Ms., UCLA and Leipzig University.
- Kiparsky, Paul (1973): ‘Elsewhere’ in Phonology. *In*: S. Anderson and P. Kiparsky, eds, *A Festschrift for Morris Halle*. Academic Press, New York, pp. 93–106.
- Kiparsky, Paul (2001): ‘Structural Case in Finnish’, *Lingua* **111**(4–7), 315–376.
- Kramer, Ruth (2016): Syncretism in Paradigm Function Morphology and Distributed Morphology. *In*: D. Siddiqi and H. Harley, eds, *Morphological Metatheory*. John Benjamins, pp. 95–120.
- López, Luis (2007): *Locality and the Architecture of Syntactic Dependencies*. Palgrave.
- Lumsden, John (1992): ‘Underspecification in Grammatical and Natural Gender’, *Linguistic Inquiry* **23**, 469–486.
- Magometbekova, Z. M. (1967): Karatinskij jazyk. *In*: E. A. Bokarev and K. V. Lomatidze, eds, *Jazyki narodov SSSR*. Vol. IV of *Iberijsko-kavkazskie jazyki*, Nauka, Moscow, pp. 323–335.
- Maiden, Martin (2018): *The Romance verb: morphomic structure and diachrony*. Oxford University Press, Oxford.
- McCreight, Katherine and Catherine Chvany (1991): Geometric Representation of Paradigms in a Modular Theory of Grammar. *In*: F. Plank, ed., *Paradigms*. Mouton de Gruyter, Berlin, pp. 91–111.
- Müller, Gereon (2004): On decomposing inflection class features: Syncretism in Russian noun inflection. *In*: G. Müller, L. Gunkel and G. Zifonun, eds, *Explorations in Nominal Inflection*. Mouton de Gruyter, Berlin, pp. 189–227.

- Müller, Gereon (2005): Syncretism and Iconicity in Icelandic Noun Declensions: A Distributed Morphology Approach. *In: G. Booij and J. van Marle, eds, Yearbook of Morphology 2004*. Springer, Dordrecht, pp. 229–271.
- Müller, Gereon (2004): A Distributed Morphology Approach to Syncretism in Russian Noun Inflection.. *In: O. Arnaudova, W. Browne, M. L. Rivero and D. Stojanovic, eds, Proceedings of FASL 12*. .
- Müller, Gereon (2005): Subanalyse verbaler Flexionsmarker. MS. Leipzig University.
- Nelson, Diane (1998): *Grammatical Case Assignment in Finnish*. Garland, New York.
- Noyer, Rolf (1992): Features, Positions, and Affixes in Autonomous Morphological Structure. PhD thesis, MIT, Cambridge, MA.
- Noyer, Rolf (1997): *Features, Position and Affixes in Autonomous Morphological Structure*. Garland, New York.
- O’Neill, Paul (2011): The Ibero-Romance verb : allomorphy and the notion of the morpheme. PhD thesis, Oxford University.
- Plank, Frans (1991): Rasmus Rask’s Dilemma. *In: F. Plank, ed., Paradigms*. Mouton de Gruyter, Berlin, pp. 161–196.
- Postma, Gertjan (1998): ‘Agreement, Anti-Agreement, and the Structure of the Verbal Paradigm’, *Groninger Arbeiten zur Germanistischen Linguistik* **37**, 169–194.
- Preminger, Omer (2011): Agreement as a fallible operation. PhD thesis, Cambridge, MA: MIT.
- Privizentseva, Mariia (2020): Declension tracks gender: Insights from mixed agreement in Russian. talk presented at NELS 51, UQAM Montreal, 6–8 November.
- Pullum, Geoffrey and Arnold Zwicky (1986): ‘Phonological Resolution of Syntactic Feature Conflict’, *Language* **62**, 751–773.
- Round, Eric (2013): Rhizomorphemes, meromorphemes, and metamorphemes. *In: M. Baerman, D. Brown and G. Corbett, eds, Understanding and measuring morphological complexity*. Oxford University Press, pp. 29–52.

- Smith, Peter, Beata Moskal, Ting Xu, Jungmin Kang and Jonathan Bobaljik (2019): ‘Case and number suppletion in pronouns’, *Natural Language and Linguistic Theory* **37**, 1029–1101.
- Starke, Michal (2009): ‘Nanosyntax: A short primer to a new approach to language’, *Nordlyd* **36**(1), 1–6.
- Stiebels, Barbara and Dieter Wunderlich (1999): ‘Second stems in Hungarian nouns’, *The Linguistic Review* **16**, 253–294.
- Stump, Gregory (1993): ‘On rules of referral’, *Language* **69**, 449–479.
- Stump, Gregory (2001): *Inflectional Morphology*. Cambridge University Press, Cambridge.
- Stump, Gregory (2016): *Inflectional Paradigms: Content and Form at the Syntax-Morphology Interface*. Vol. 149 of *Cambridge Studies in Linguistics*, Cambridge University Press, Cambridge.
- Trommer, Jochen (2016): A postsyntactic morpheme cookbook. In: D. Siddiqi and H. Harley, eds, *Morphological Metatheory*. John Benjamins, pp. 59–94.
- Wiese, Bernd (1994): Die Personal- und Numerusendungen der deutschen Verbformen. In: *Funktionale Untersuchungen zur deutschen Nominal- und Verbalmorphologie*. Niemeyer, Tübingen, pp. 161–191.
- Wiese, Bernd (1999): ‘Unterspezifizierte Paradigmen. Form und Funktion in der pronominalen Deklination’, *Linguistik Online* **4**. www.linguistik-online.de/3_99.
- Wiese, Bernd (2003): Zur lateinischen Nominalflexion: Die Form-Funktions-Beziehung. Ms., IDS Mannheim.
- Williams, Edwin (1994): ‘Remarks on Lexical Knowledge’, *Lingua* **92**, 7–34.
- Williams, Edwin (1997): ‘Blocking and Anaphora’, *Linguistic Inquiry* **28**, 577–628.
- Winkler, Eberhard (2011): *Udmurtische Grammatik*. Harrassowitz, Wiesbaden.
- Wright, Joseph (1930): *Grammar of the Gothic language*. Oxford University Press, Oxford. (reprint of 1910 edition).

- Wunderlich, Dieter (1996): Minimalist Morphology: The Role of Paradigms. In: G. B. B. van Marle, ed., *Yearbook of Morphology 1995*. Kluwer, Dordrecht, pp. 93–114.
- Wunderlich, Dieter (1997): A Minimalist Model of Inflectional Morphology. In: C. Wilder, H.-M. Gärtner and M. Bierwisch, eds, *The Role of Economy Principles in Linguistic Theory*. Akademie Verlag, Berlin, pp. 267–298.
- Wunderlich, Dieter and Ray Fabri (1995): ‘Minimalist Morphology: An Approach to Inflection’, *Zeitschrift für Sprachwissenschaft* **14**, 236–294.
- Wurzel, Wolfgang Ullrich (1987): Paradigmenstrukturbedingungen: Aufbau und Veränderung von Flexionsparadigmen. In: W. U. Wurzel, ed., *Studien zur Morphologie und Phonologie II*. Number 156 in ‘Linguistische Studien, Reihe A: Arbeitsberichte’, Akademie der Wissenschaften der DDR, Zentralinstitut für Sprachwissenschaft, Berlin, pp. 135–155.
- Wurzel, Wolfgang Ullrich (1998): Drei Ebenen der Struktur von Flexionsparadigmen. In: A. O. R. Fabri and T. Parodi, eds, *Models of Inflection*. Niemeyer, Tübingen.
- Zompì, Stanislao (2017): Case decomposition meets dependent-case theories. Master’s thesis, University of Pisa, Pisa.
- Zwicky, Arnold (1985): How to describe inflection. In: M. Niepokuj, M. V. Clay, V. Nikiforidou and D. Feder, eds, *Proceedings of the 11th Annual Meeting of the Berkeley Linguistic Society*. BLS, University of California, Berkeley, CA, pp. 372–386.
- Zwicky, Arnold (1990): Inflectional morphology as a (sub)component of grammar. In: W. U. Dressler, H. C. Luschützky, O. E. Pfeiffer and J. R. Rennison, eds, *Contemporary Morphology*. Walter de Gruyter, Berlin.