Paradigms regained

Theoretical and empirical arguments for the reassessment of the notion of paradigm

Edited by

Gabriele Diewald

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Chapter 1

Paradigms regained

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The contributions of this volume are anchored in the notions of paradigm and the paradigmatic organization of linguistic items. The papers united here are substantial elaborations and enhancements of concepts as well as case studies that were presented at a workshop "Paradigms regained" held at the 52nd SLE Annual Meeting (SLE 2019), which took place from 21st-24th August 2019 at Leipzig University.

Its background is a long-lasting project aiming at assessing the cognitive reality of (grammatical) paradigms throughout various linguistic domains, thereby testing this notion for its ability to allow for "graceful integration" (Jackendoff 2011). A notion like this should be able to account for empirical findings and general cognitive mechanisms. In this volume, different domains of grammatical phenomena are investigated to illustrate what the concept of grammatical paradigms can and cannot – yet – explain. The theoretical and conceptual foundations of this project are grammaticalization theory, implicational morphology, usage-based constructional approaches, cognitive semantics, as well as corpus-based and experimental approaches to grammatical structures in diachronic and synchronic phenomena.

Definitions and positions

The notion of paradigms is primarily discussed in morphological theories, where it plays a central role as a tool for describing the structures in which inflectional forms are organized. The members of inflectional paradigms are primarily identified by their formal properties (cf. Fabri 1998: 7). Each member of a paradigm corresponds to a cell, which can be either filled by a form or by a form-feature pair

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(Lieb 2005; Werner 1994; Wurzel 1984). Lately, work on relational structures in morphological paradigms (Ackerman et al. 2009; Blevins 2015; 2016) has shown that this purely instrumental conception of paradigms as nothing but a useful descriptive convention clearly underestimates its cognitive foundation and functional importance. Paradigms in this sense are structures which provide "cohesive wholes" (Blevins 2015: 94) for the paradigm members. These structures consist of relations and associations between the individual cells within and in between paradigms. As such, they are part of speaker knowledge, because they provide necessary generalizations that allow speakers to infer previously unencountered forms of lexical items (Ackerman et al. 2009:54). Knowing the overall organizational structure of the forms allows for inferring forms and their functions from one another, i.e., putting them into relation to one another.

This inferential nature of paradigms is what can be generalized as a structuring principle to other areas of grammar (Nørgård-Sørensen et al. 2011: XI). For this it is necessary to expand the notion of paradigms from a purely inflectional notion to a broader sense: It is assumed that grammatical items are structured in *grammatical paradigms*. Grammatical paradigms in this sense are functional sets (Andersen 2008; Diewald 2020; Nørgård-Sørensen et al. 2011; Politt 2021). They are holistic semiotic structures, consisting of ordered bundles of oppositions between all marked and unmarked members of the category in question (which in grammaticalization are modified in various ways). Take the grammatical category TENSE as an example: The members of the TENSE paradigm share a common categorical function, namely situating events relative to the speech time. The unmarked zero in TENSE is the present. The specific function of all other members of the category – like past and future forms – can be described relative to that unmarked zero, i.e., in opposition to it and of course also in opposition to one another. Those oppositions serve a similar function as the aforementioned relations within inflectional paradigms; they (i) relate the members of a grammatical paradigm to each other and (ii) define the specific categorical function of each member relative to the categorical function of the other members In short: The oppositions and relations between the members of a grammatical paradigm are the very essence of grammatical structures (cf. Politt 2021). They "cannot be described without reference to the paradigmatic organisation that lies behind the syntagmatic realisations" (Nørgård-Sørensen et al. (2011: 71):71).

It is because of this internal relational structure that grammatical paradigms are an invaluable tool for describing the target structures of grammaticalization processes and assessing the status of a grammaticalizing element. These elements acquire a place in such a structure or change their place within it. By entering grammatical paradigms, elements form new oppositional pairs with other

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grammatical elements that are members of the same superordinate category, e.g. TENSE (Diewald & Smirnova 2010b: 4:4). By developing this opposition, the newly grammaticalized item becomes a member of a grammatical paradigm (Bybee et al. 1994; Lehmann 2015).

While it is undisputed that "grammar" is the target domain of grammaticalization processes, and that "paradigms" play a role in the development of Indo-European languages, the exact extend of the notion of paradigm and grammatical paradigm and its usefulness for languages with little or no inflectional morphology has been under dispute for some time now. For once, there is fundamental criticism concerning the lack of an exact definition of "grammar", as put forth by Himmelmann: "[w]ork in grammaticalization [...] hardly ever makes explicit the concept of grammar underlying a given investigation" (Himmelmann 1992: 2). Furthermore, there is a lively discussion about (i) whether the notion of paradigm should be extended to syntagmatic linguistic structures beyond bound morphology and periphrastic forms, as for example in Construction Morphology (Booij 2010; 2016; 2018), and include, for example, grammatical oppositions on the level of the whole clause, like the opposition between sentences particles and modal particles. In constructional approaches, paradigms are often "marginalized or even lost" (Diewald 2020: 277). Another hotly disputed issue is (ii) what the benefit of such an extension might be (Bisang 2014; Diewald 2017; 2020; Haspelmath 2000; Wiemer & Bisang 2004).

This discussion, which arose in typological research and grammaticalization studies, meets with current questions and challenges in construction grammar. The latter aims at describing grammatical structures in their entirety. If grammatical paradigms are indeed structures of the internal organization of grammatical categories, it must be possible to describe them in constructional terms as well. The goal is therefore to find an integrative approach that combines both construction grammar and paradigms as organizational structures of grammar (Diewald 2009; 2015; 2020; Diewald & Smirnova 2010a; Politt 2021). In such an approach, paradigms are not only the aforementioned generalizations of associative structures but they can be seen as constructions "whose function and meaning is defined by the specific number and constellation of [their] components", which "mutually define each other's values" through their inherent indexical structure (Diewald 2020: 303).

The basic assumptions derived from this background are

- paradigms are necessary generalizations of grammatical structures,

- paradigms are part of the grammatical knowledge of speakers, and

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- paradigms are what makes grammaticalization processes structured processes.

These basic assumptions are to be tested and refined based on the case studies and theoretical reflections offered by the contributions of this volume.

The papers

The contributions of this volume explore and test these assumptions, raising questions like the following ones:

- Can research from different linguistic subdisciplines underpin the importance of the notion of paradigms?

- What are the advantages (and limitations) of such an integrative approach of describing grammatical structures as paradigmatic, i.e., as consisting of oppositions and relations?

- Is there independent evidence from neighboring disciplines supporting the assumption of paradigms as cognitive entities?

The contributions range from diachronic and synchronic case studies to broadly scaled surveys of different types of paradigmatic organization to theoretical reflections of relevant notions within this field of research. This allows for an arrangement of the contributions to this volume into three sections: The first section, containing two papers, deals with general terminological, definitional, and theoretical issues. A broad survey on large scale diachronic mechanisms and drifts building up inflectional paradigms of various types (ANDERSEN) is followed by a theoretical reflection on the status of paradigms as metaconstructions in the construction grammatical approach (LEINO). The second section consists of two papers paying heightened attention to the details of particular mechanisms and (diachronic) processes steering the organisation of morphological paradigms and more extended constructions, with one of them investigating the interplay of inflection and derivation in Slavic languages (WIEMER), and the other one dealing with the morphological process of recursion in relation to composition mainly drawing on examples from Turkish (REINER). The third section consists of six contributions offering detailed language specific case studies, taking up linguistic phenomena of Danish (HANSEN, HELTOFT), Dutch (NUYTS, CAERS & GOELEN), German (HARTMANN & NEELS), Norwegian (KUREK-PRZYBILSKI) and

French (Kragh), most of them addressing or focusing on diachronic issues. The following are brief outlines of the contributions in the order in which they appear.

In „Paradigms of paradigms" Henning Andersen provides a broad overview of the types of organisational structures of paradigms in inflectional paradigms (selectional sets) arising in the course of diachronic processes. The article provides a classification of formal and functional complexities of paradigms of verbal and nominal categories (case, number, person, tense, aspect, mood, voice) that are due to hierarchical nesting or embedding of their morphological exponenda. Attention is given to the interaction of different techniques within one grammatical paradigm in a particular language, e.g., the "typological gradation" in the paradigms of verbal categories in English, French, and Latin conjugations, which includes the phenomena of auxiliarisation, agglutination, irregular forms, fusion, ablaut and suppletion. Contending that morphological systems are typologically diverse (due to diachronic processes), it is argued that morphological theory – also in synchronic analysis – must take care of the fundamental feature of typological diversity in its theoretical and methodological layout from the start.

In "Formalizing paradigms in Construction Grammar" Jaakko Leino discusses the question of how constructions in a language are organized. He draws on both Construction and Cognitive Grammar to explore similarities and differences – relations and oppositions – between constructions and introduces the notion of *metaconstructions* (Leino 2003; Leino & Östman 2005) as a generalization of constructions on a more schematic level. leino contrasts the two notions of metaconstructions and grammatical paradigms with each other and explores how metaconstructions can serve as a means to describe the internal organization of grammar and as a base for the formation and integration of new constructions in(to) the system.

The comprehensive contribution by Björn Wiemer "No paradigms without classification: how stem-derivation develops into grammatical aspect" develops detailed suggestions on the subclassification of complex paradigms of verbal aspect in Slavic languages. Based on data from several Slavic languages, it proposes a layered conception of the notion of paradigm. The first layer rests on the principle binary distinction between perfective and imperfective aspect, which is realized by the inherent aspectual features of the verb stems and their associated derivational pattern. The second layer is constituted by subparadigms, which are triggered by specific, mutually exclusive bundles of regular usage conditions and contextual features. Drawing on notions from Construction Grammar approaches and Word-and-Paradigm models, it is suggested that these bundles of

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features can be conceived as constructional templates for individual aspectual values within subparadigms, which operate on an underlying binary system of aspectual distinctions based on verb stems. Thus, the paper puts forward far-reaching suggestions for analysis of grammatical distinctions that integrate lexical, constructional, and contextual features.

In "Recursion and Paradigms" TABEA REINER discusses morphological paradigms from both a constructional and compositional perspective. By comparing the status of inflectional paradigms in Constructional, Distributed, and Autonomous Morphology, she raises the question what they can contribute to a model of inflectional recursion. Namely, paradigms could serve as a means of modelling restrictions on recursion patterns in inflectional morphology and therefore constitute a fundamental unit of morphological description.

In "Generics as a paradigm – a corpus-based study of Norwegian" ANNA KUREK-PRZYBILSKI investigates how the notion of grammatical paradigms can help in modelling language specific grammatical categories. Looking at encyclopedic texts from Nynorsk, she develops a genericity paradigm that can serve as a baseline for investigating other varieties of a language and helps in understanding the grammaticalization process of generic contexts and expressions.

In "Redundant indexicality and paradigmatic reorganisations in the Middle Danish case system" BJARNE SIMMELKJÆR SANDGAARD HANSEN investigates the fundamental changes of the Danish case system during the Middle Danish period as an instance of grammaticalization. The central issue is the increasing topological fixation inside the noun phrase and its interaction with phrase internal agreement and case marking. The newly established system of noun phrase marking is shown to be an instance of grammatical change proper (instead of e.g. phonologically induced change) and provides a prime example of the claim that grammaticalization is inextricably linked with paradigmaticisation.

The contribution by LARS HELTOFT "The semantic reorganisation of case paradigms and word order paradigms in the history of Danish" investigates the interaction of word order change, namely the topological fixation of the subject position and serialisation rules in the middle field as well as change in the case system in the history of Danish. Assuming that inflectional and (pluri-item) constructional representations of grammatical information alike are organized in paradigms, this highlights the shifts in the "co-organisation" of the expression of grammatical content. It is suggested that this type of complex collaboration between morphological and topological marking techniques can be called second-order paradigms or hyperparadigms.

STEFAN HARTMANN and JAKOB NEELS analyze the grammaticalization of a family of constructions in "Grammaticalisation, schematisation and paradigmaticisa-

tion: How they intersect in the development of German degree modifiers". Drawing on both synchronic and diachronic corpus data, they explore the gradual context expansion of German degree modifier-constructions such as [*ein wenig* X] ('a little'), [*ein bisschen* X] ('a bit'), [*ein Quäntchen* X] (lit. 'a quantum'), [*ein Tick* X] (lit. 'a tick') and [eine Idee X] (lit. 'an idea'). They aim to show that paradigmaticisation leads to multiple interrelated paradigms with varying levels of schematicity, similar to the differences of higher and lower level constructions discussed by Traugott (2007).

Kirsten Jeppesen Kragh draws on French diachronic data to illustrate "The importance of paradigmatic analyses. From one lexical input into multiple grammatical paradigms". By following the grammaticalization path of the French verb *voir* 'to see' and its polygrammaticalization into multiple grammatical categories, Kragh shows that the target structures of grammaticalization do not necessarily have to belong to the same grammatical areas. For *voir*, she illustrates grammaticalization paths into TENSE, ASPECT, MOOD, VOICE, and discourse markers and prepositions. Synchronic paradigms serve as the target structure of these grammaticalization paths and allow for precise descriptions of the newly acquired grammatical functions of the grammaticalized elements due to their inherent relational structure.

In raising the question "The Dutch modals, a paradigm?" Jan Nuyts, Wim Caers and Henri-Joseph Goelen depart from morphology-based definitions of "paradigm" and adopt a cognitive perspective, whereby a paradigm is defined as a "cognitively real phenomenon". Relevant criteria for a paradigm, more precisely the gradual rise of paradigms, are seen in the gradual accumulation of shared grammatical and semantic features, and an increasingly pronounced "divisions of labor", i.e. a stricter internal functional organization, among the entities envolved. In presenting a "meta study" of several diachronic investigations of the development of the Dutch modal verbs *kunnen* 'can', *mogen* 'may', *moeten* 'must', and *hoeven* 'need', the broad lines of change and convergence in structural and semantic features of this group are taken as an instance of this type of paradigmaticization. Furthermore, the authors raise the question whether grammaticalization should always be seen as a necessary correlate of paradigmhood, thus, offering arguments for further discussion on the theoretical issue concerning the distinction between paradigmatic relations on the one hand and narrowly defined paradigms on the other hand.

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Chapter 2

Paradigms of paradigms

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This paper is concerned with inflectional morphology. Its point of departure is the old insight that paradigms of content categories are typically nested inside other paradigms forming hierarchical structures, e.g., case paradigms are included in number paradigms: CASE] NUMBER]. Similarly, say, in the Latin verb, PERSON] NUMBER] TENSE] ASPECT] MOOD] VOICE] (Section 1). As for exponence, paradigms (selectional sets) of inflectional classes (declensions, conjugations) are more often flat (linear) and asymmetrical with respect to one or more characteristics, e.g., meaning, stem shape, or productivity. But they may include selectional sets of allomorphs at a lower level, say, in individual cases or tenses, presenting paradigms in paradigms within paradigms (...) (Section 1.1). A third dimension in inflectional systems is the typological paradigm of morphological techniques commonly reflected in synchronic variation; English verb morphology, for instance, comprises analytic (*will call, got arrested*), agglutinative (*waded, jogged*), fusional (*kept, built*), and introflective (*sang, hung*) formations (Section 2.1). As additional examples of typological paradigms the conjugations of French, Latin, and Russian are examined (Section 2.1-Section 2.4). It is shown that such typological variation may reflect the historicity of an inflectional system. Since this variation is part of speakers' competence, it should be recognized as an inomissible part of synchronic description (Section 3).

1 Introduction

1.1 Content paradigm

The purpose of this paper is to draw attention to paradigmatic relations in inflectional morphology that have traditionally been overlooked. The background

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for this examination is the distinction between content paradigms and exponent paradigms . We begin with paradigms of grammatical categories.

Quite naturally the notion of paradigm – what Saussure ([1916] 1959) called associative relations – has historically implied a focus on grammatical content categories and their members. Saussure illustrated the notion with members of inflectional categories and derivational categories and, to include the exponent level, sets of homonyms. When Jakobson (1956b) characterized speech as a product of the dual processes of selecting and combining linguistic entities, the selectional sets he referred to were evidently paradigms of lexical and grammatical categories (see also Bloomfield 1933: 164; Hamp 1966, s.v. *selection*). Such categories serve well to illustrate the diversity of selectional sets.

Scalar paradigms perhaps best illustrate Saussure's understanding that linguistic categories are imposed on the world of experience and thereby shape our conceptual categories. Consider the colors in the world around us, which in the world of languages are represented by anywhere from two to a dozen simple color terms. The modern understanding of the hues of the color wheel has facilitated the identification of a multitude of colors. Their multifarious exploitation in design and fashion, as in interior decorating and in clothing, suggests that this perceptual dimension has a potential for infinitely differentiated paradigms of hues and subparadigms of shades, tints, and tones—through the imposition of color names (or code numbers). Many other scalar dimensions of experience are expressed with paradigms of contrary opposites, e.g., *large* vs *small*, *wide* vs *narrow*, *dark* vs *light*, *loud* vs *soft*, which are employed relative to explicit or implicit standards in both literal and metaphorical senses.

Graded (step-wise) categories are as common. The number words from *one* to *ten*, which recursively name units, tens, hundreds, thousands, and so on, illustrate how paradigms can be nested inside paradigms, in this instance *ad infinitum*; see (1). Decimal fractions of each whole number likewise form nested paradigms stretching to the infinitely small, a conceptual counterpart to the potentially infinite differentiation of the realm of colors.

(1)   UNITS] TENS] HUNDREDS] THOUSANDS] TEN-THOUSANDS] ...

Grammatical categories typically form paradigms of contradictory opposites. These paradigms do not have infinitely many members, but a hierarchical ordering of paradigms is commonly in evidence. Typically, for instance, in languages with grammatical cases, the case paradigm is subordinated to a number paradigm; see Table 1.

Table 1: Latin First declension

	Singular	Plural
nom	*tabul-a*	*tabul-a-e*
acc	*tabul-a-m*	*tabul-ā-s*
gen	*tabul-a-e*	*tabul-ā-r-um*
dat	*tabul-a-e*	*tabul-ī-s*
abl	*tabul-ā*	*tabul-ī-s*

This relation of subordination, which can be summed up as CASE] NUMBER], becomes manifest in historical change when CASE is lost while NUMBER remains, as in many European languages.

(2)   PERSON] NUMBER] TENSE] ASPECT] MOOD] VOICE]

Similarly in verbs, the category of PERSON is often subordinated to that of NUMBER. In Latin this relationship is realized in each of the three tenses Present, Imperfect, Future, in both aspects, Infective and Perfective (where the tenses are called Perfect, Pluperfect, and Future Perfect), in both moods, Indicative and Subjunctive, and in both voices, Active and Passive, yielding a structure that is easily represented by a tree-diagram, but can be summed up as in (2).

1.2 Exponent paradigms

When we turn to the expression side of languages, we find paradigms of less consistently hierarchical structure. A language may have extensive allomorphy in its inflectional categories; see, for example the Latin case allomorphy in Table 2.

Table 2: Allomorphy in Latin noun declension. Singular

nom.sg	-a/-e/-es/-ēs/-is/-s/-ū/-um/-us/-Ø
acc.sg	-am/-e/-em/-im/-ū/-um/-us/-Ø
gen.sg	-ae/-eī/-ī/-is/-ūs
dat.sg	-ae/-eī/-ī/-u/-uī
abl.sg	-ā/-e/-ē/-i/-ō/-ū

The allomorphs are organized into several partly overlapping classes, the 'declensions'. The grammatical tradition recognizes five declensions (Table 3), that

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is, a paradigm of five noun classes forming a flat structure But several of the declensions have cases with notable internal allomorphy, that is, allomorph paradigms within case paradigms within the paradigm of declensions; see Table 3.

Table 3: Allomorphy in Latin case desinences

	Decl. 1	Decl. 2	Decl. 3	Decl. 4	Decl. 5
nom.sg	-a	-um/-us/-Ø	-e/-es/-is/-s/-Ø	-ū/-us	-ēs
acc.sg	-am	-um/-us	-e/-em/-im/-Ø	-ū/-um	-em
gen.sg	-ae	-ī	-is	-ūs	-ei
dat.sg	-ae	-ō	-ī	-u/-uī	-eī
abl.sg	-ā	-ō	-e/-i	-ū	-ē

In Decl. 2, for instance, feminines and masculines have syncretic desinences in all cases; e.g., *fīcus*.f.nom.sg, *fīcum*.f.acc.sg, *fīcī*.f.gen.sg 'fig', *servus*.m.nom.sg, *servum*.m.acc.sg, *servī*.m.gen.sg 'slave'. Both masculines and neuters have additional, lexically conditioned allomorphs: Some Decl. 2 masculines have a -Ø nom.sg desinence (*vir* 'man', *liber* 'book'), and a few Decl. 2 neuters have -us.nom/acc.sg (*vulgus* 'crowd', *vīrus* 'poison'). This allomorphy is conditioned by the gender of lexical stems; hence each of the endings -um.nom.sg and -us.acc.sg points to (or indicates) the neuter gender of its noun stem; see Table 4.

Table 4: Allomorphy paradigms in Latin Second-declension desinences

nom.sg		
	masculine	-us/-Ø
	feminine	-us
	neuter	-um/-us
acc.sg		
	masculine	-um
	feminine	-um
	neuter	-um/-us

A similar case paradigm in Russian (Table 5) includes paradigms of allomorphs that indicate the gender of the stems: Nom.sg -o (*okn-o* 'window') indicates neuter, Nom.sg -Ø (*gorod-Ø* 'town') indicates masculine. But additional allomorphs within the masculine point to referential features such as animacy (acc.sg *syn-a* 'son' vs

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Table 5: Allomorphy paradigms in Russian First-declension desinences

nom.sg	masculine	
	neuter	-Ø
		-o
acc.sg	masculine	
	neuter	-Ø/-a
		-o
gen.sg	masculine	
	neuter	-a/-u
		-a
loc.sg	masculine	
	neuter	-e/-u
		-e

gorod-Ø) or mass vs countable (gen.sg *čaj-u* 'tea' vs *gorod-a*) or material vs non-material referent (loc.sg *v sneg-ú* 'in the snow' vs *v sneg-e* 'in snow (as concept or word)'.

In terms of the theory of semiotics of Charles S. Peirce, the semiotic value of this low level allomorphy is identified as indexical (Shapiro 1969; Anttila 1989; Andersen 1980; 2020): Individual allomorphs point to, indicate, or are indexes of phonological, grammatical, or lexical features of given noun stems or features of their referents or combinations of such subsidiary information.

A systematic investigation of the contribution of this secondary level of signaling in communication is a task for the future. But the index values of allomorphs or morphological processes such as mutation or truncation will be relevant repeatedly below.

2 Typological paradigms

Here we turn to yet another paradigmatic relation in inflection, one that opens up a neglected perspective on morphological systems.

For the purposes of this exposition it is useful to be able to refer to Sapir (1921: 120-146) typology of morphological techniques. It is presented in Table 6 with minimal characterizations of the individual types, derived from Sapir's text; I use *introflection* for Sapir's *symbolism*.

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Table 6: Basic morphological techniques

A.	Analytic	Constructions of lexical and grammatical words, free or clitic.
B.	Synthetic	
	Agglutination	Simple juxtaposition of bound lexical and grammatical morphemes. ± Cross-boundary phonological or phonotactic indexing.
	Fusion	Grammatical morphemes with cumulative grammatical content. ± Cross-boundary grammatical and/or lexical content indexing.
	Introflection	Lexical morphemes with grammatical content.
C.	Isolating	Grammatical exponents not constructed with lexical morphemes.

The major types (A, B, C) form a paradigm, and within the synthetic macrotype, agglutination, fusion, and introflection form another paradigm. In the following pages we will see some examples of how these paradigms are exploited in morphological systems. The examples are taken from English (Section 2.1), French (Section 2.2), Latin (Section 2.3), and Russian (Section 2.4).

2.1 English conjugation

It is convenient to begin with the conjugation of the English verb; see the major verbal categories in Table 7. Infinitive and imperative are uninflected. They have identical lexical content; their distinct grammatical content is expressed solely by their syntactic properties. In the Present Indicative, the 3sg is suffixed /-əz/ (|| /-ız/) after sibilants, /-s/ after voiceless stops, and otherwise /-z/, e.g., *pitch-es, bat-s, jog-s, run-s*. The content of this desinence is debatable; some would consider it cumulative ('3sg Present Indicative'), but it might be just 'Indicative', specifying a predicate as asserted, in the least marked Person–Number–Tense environment. Assuming that cumulative exponence is characteristic of fusion (cf. Table 6), this noncumulative interpretation would be compatible with agglutination, as are the phonotactic adjustment after sibilant stems and the phonological adjustment after voiceless stops. The Present participle in /-ıŋ/ is agglutinative.

Table 7: English verb morphology. Categories

Present system	Preterite system
Infinitive	
Imperative	
Present tense	Preterite
Present participle	Past participle
Auxiliated: Progressive and Futures	Auxiliated: Perfect and Passives

The Past tense and Past participle are expressed by three formations that differ in morphological technique. They form a selectional set, a paradigm; data from Bloch (1947), Palmer (1987: 249–257)).

Preterite 1 is the productive pattern characteristic of thousands of verbs and applied to all new verbs, is agglutinative. It has a phonotactic adjustment /-əd/ (‖ /ɪd/) after stem-final dental plosives (here written ...T), a voiceless allomorph /-t/ after stem-final voiceless consonants, and otherwise /-d/; see Table 8.

Table 8: English Preterite 1. Agglutinative

...T__	...vl C__	Default
bat: -əd (*-ed*)	*pitch*: -t (*-ed*)	*wail*: -d (*-ed*)
bat	*pitch*	*wail*
batted	*pitched*	*wailed*
wade	*miss*	*jog*
waded	*missed*	*jogged*

Preterite 2 is fusional. It comprises verbs with the regular /-t/ and /-d/ allomorphs and some that have a lexically conditioned /-t/. Some of these verbs have a vowel mutation in the Preterite (*keep–kept, flee–fled, mean–meant*), some have both a vowel and a coda mutation (*lose–lost*), some have a vowel mutation and coda truncation (*can–could, catch–caught*); a couple have just coda truncation (*make–made*); see Table 9.

The mutations in the stems of these verbs are conditioned by the Past-tense category. Since Past tense is separately expressed by the distinct Past tense marker in all these verbs, the mutations are indexical, and the morphological type of these forms is fusional; cf. Table 6. Some of these verbs have an agglutinative Preterite 1 variant in which the mutation is omitted, e.g., *leaped, dreamed, kneeled,*

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Table 9: English Preterite 2. Fusional

Regular –t	Regular –d	Irregular –t
Vowel mutation		
keep, leap, sleep, weep, ...	*flee, say, hear, tell, sell, ...*	*dream, mean, feel, kneel, ...*
Vowel mutation and coda mutation	Vowel mutation and coda truncation	
cleave, leave, lose,...	*can, shall, will*	*catch, teach, bring, ...*
	Coda truncation	
	have, make	

cleaved. There are also basically agglutinative verbs with a variant 'Irregular –t' Preterite 2 and no mutation, e.g. *spell–spelt, spill–spilt*.

There are no verbs in Preterite 2 that have the phonotactic vowel epenthesis (-əd) found in Preterite 1. Instead, Preterite 2 verbs in stem-final dental plosive (here written ...T) truncate the ...t or ...d after the appropriate Preterite allomorph has been selected, that is, ...t-t → -t, ...d-d → -d, ...d-t → -t; see Table 10. Some English experts view the ending in these verbs as -Ø (Palmer 1987). The verbs with regular -t or -d might be described that way; but the verbs with 'Irregular -t' suggest that it is indeed the stem-final dental plosive that is truncated.

Table 10: English Preterite 2′. Fusional

Regular -t ...T truncation	Regular -d	Irregular -t
slit, split, put, bet, let, cut, hurt, cost, must, burst, ...	*bid, rid, shed, spread, ...*	*bend, rend, send,' build, ...*
Vowel mutation and ...T truncation		
meet	*bleed, lead, read, slide,...*	

Preterite 3 comprises verbs with unsuffixed and with suffixed Pst.ptcp. Besides this distinction there are verbs with three alternating vowels (*sing–sang–sung, drive–drove–driv-en*), with two vowels, identical in Prs and Pst.ptcp (*run–ran–run, know–knew–know-n*) or identical in Pst and Pst.ptcp (*hang–hung–hung,*

speak–spoke–spok-en), and with a single vowel throughout (*beat–beat–beat-en*); see Table 11.

Preterite 3 is typologically diverse. In the unsuffixed lexemes past tense and past-participle function are expressed through introflection (cells 1.1–1.3). In the suffixed lexemes, past tense is expressed through introflection (cells 2.1–2.4), and past-participle functions by the suffix alone (cells 2.2, 2.4; agglutination) or by the suffix accompanied by stem-vowel mutation (cells 2.1, 2.3); this is fusion.

Casual speaking styles show a strong tendency to extend the introflective past-tense forms to past-participle function, e.g. *I would've did it differently* (cell 2.1), *you could've came earlier* (cell 1.2), *they should've took the other one* (cell 2.2).

Table 11: English Preterite 3

1. No past-participle suffix	2. Suffixed participle
1.1 Three alternating vowels	2.1 Three alternating vowels
sing (+ 9 more)	*drive* (+ 8 more), *fly, do*
1.2 Distinct vowel in Pst	2.2 Distinct vowel in Pst
come, run	*know* (+ 4), *take* (+ 1), *slay, eat, give, see, bid, fall, draw*
1.3 Distinct vowel in Pst and Pst.ptcp	2.3 Distinct vowel in Pst and Pst.ptcp
cling (+ 10), *hang, strike, sneak, shine, bind* (+ 3), *hold, sit* (+2), *shoot, fight, light*	*speak* (+ 5), *break* (+ 1), *choose, lie, get* (+ 4), *bite* (+ 4)
	2.4 One vowel in all three stems
	beat

The different formations of the English Preterite form a typological paradigm as in Table 12. As a selectional set they are evidenced in synchronic (stylistic, social) variation. Preterite 1 ~ Preterite 2: *dreamed ~ dreamt, kneeled ~ knelt*; Preterite 1 ~ Preterite 3: *strived ~ strove, thrived ~ throve*, (metaphorical) *weaved* (through traffic) ~ *wove, slayed* (an audience) ~ *slew*; Preterite 2´ ~ Preterite 3: *(for)bid ~ (for)bade*; note Preterite 1 ~ 2 ~ 3 in *cleave–cleaved ~ cleave–cleft ~ cleave–clove–cloven*; all variants cited from *The American Heritage Dictionary*.

Table 12 displays the paradigm of morphological techniques of English conjugation.[1]

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[1]English noun plurals exemplify the same variation. Analytic: *heads of cattle, … cabbage*; *pairs of scissors, … trousers, cloves of garlic*. Agglutination: *horse-s, cat-s, dog-s, cow-s*; *ox-en*. Fusion: *calf–calv-es, house–hous-es, youth–youth-s*; *child–childr-en*. Introflection: *woman–women,*

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Table 12: English conjugation in typological perspective

Analytic	Futures (*will*, *is going to work*), Continuous (*is*, *was*, *has been working*), Retrospective (*has*, *had worked*), Passive (*was*, *got fired*)
Agglutination	Present: 3sg Indicative; Prs.ptcp; Preterite 1. Preterite 3: suffixed Pst.ptcp (types *known*, *beaten*)
Fusion	Preterite 2. Preterite 3: suffixed Pst.ptcp (types *driven*, *spoken*) Modal verbs, *have* (*has*, *had*), *been*
Introflection	Preterite 3: Pst, unsuffixed Pst.ptcp *be* (*am*, *is*, *are*, *was*, *were*)

Here it is worth noting that the vowel alternations in Preterite 3 verbs reflect those of the Indo-European Present vs. Perfect formations. These apophonic alternations, which Germanic shares with all the other Indo-European languages, may be at least 7000 years old. The agglutinative Preterite 1, by contrast, is Common Germanic heritage, perhaps less than 2500 years old. With the exception of the 'be' passive, the analytic, auxiliated formations are much younger.

It appears that this typological perspective reflects what one can call the historicity of the system of verbal morphology.

Now, we know enough of the history of English to recognize that this is not the same as reflecting the history of the language. A historical account will acknowledge (i) that Preterite 2 developed from Preterite 1 thanks to a variety of conditioned sound changes, so it is younger; (ii) that in Old English our apophonic Preterite 3 verbs had a separate set of past-tense desinences, that is, they were fusional; they became introflective only when this 'strong' past-tense inflection was lost; but also (iii) that more Preterite 3 verbs have changed to Preterite 1 or 2 since Old English, than vice versa, and (iv) that there is a similar predominance of Preterite 2 verbs transitioning to Preterite 1.

None of these details can be read off the overview in Table 12. Still the typological paradigm undeniably suggests a generalized historical perspective on this synchronic system.

In the following pages I will look at a few other languages whose history is known, to see to what extent such a historical perspective may be a common

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man–men; *foot–feet*, also *tooth*, *goose*; *mouse–mice*, also *louse*; *crisis–crises*, *alumna–alumnae*; *sheep–sheep*, also *deer*, *grouse*, *trout*, *fish*; *sail*, *cannon*.

feature of morphological systems.

2.2 French conjugation

French has two regular conjugations, one productive, exemplified by *chanter* 'sing', the other practically unproductive, typified by *finir* 'finish'. In addition there is a number of irregular verbs. The system of categories can be seen in Table 13.

An important feature of French conjugation is that finite verbs are obligatorily accompanied by subject clitics; consequently the (contingent) suffixal Participant (Person, Number) marking is strictly an agreement feature.

Table 13: French tense system

Present system	Preterite system	Infinitive system
Present indicative	Past indicative	Future
Present subjunctive	Past subjunctive	Conditional
Imperfect		
Present participle	Past participle	Infinitive

Conj. 1 is agglutinative: Suffixes for tense, mood, person, and the nonfinite categories simply follow the stem. There is some stem allomorphy: Some verb stems with mid vowels have a regular alternation between pretonic and tonic (final, closed) syllable: /e/, /ə/ ~ /ɛ/ (*céder–cède* 'cede', *jeter–jette* 'throw', *appeler– appelle* 'name, call'), /ø/ ~ /œ/ (*beurrer–beurre* 'butter'), and /o/ ~ /ɔ/ (*coller–colle* 'glue'). The alternation has no apparent synchronic motivation; contrast *aider– aide* 'help' with /ɛ/, *sauver–sauve* 'save' with /o/; but it is phonologically (prosodically) conditioned, and it is irrelevant to the stem–desinence boundary. Thus it is compatible with agglutination.

Conj. 2 is similarly agglutinative. But it is characterized by two truncations that produce distinct stems for (i) Prs.ind.123sg and (ii) the Preterite and Infinitive systems; see (3.a–b), where superscript 0, 00 represent coda and rhyme truncation, respectively; the basic stem ends in /s/, e.g., /finis-/. The truncations produce stem allomorphs with specific grammatical meaning: This is a fusional feature.

(3)   a.   Prs.ind: fini^0-Ø.123sg vs finis-õ.1pl, finis-Ø.3pl; Prs.sbj: finis-Ø.123sg.3pl, finis-j-õ.1pl; Impf: finis-ɛ.123sg.3pl; Prs.ptcp: finis-ã

   b.   st.ind: fin^{00}-i-Ø.123.sg, fin^{00}-i-m.1pl, fin^{00}-i-t.2pl, fin^{00}-i-r.3pl; Pst.sbj: fin^{00}-i-s-Ø.12.sg.3pl, fin^{00}-i-s-j-õ.1pl, fin^{00}-i.pst.ptcp, fin^{00}-ir.inf

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The contrast between the stem-final ...s- in finis-Ø.prs.sbj.123sg.3pl (*finisse(nt)*) (3) and the Pst-sbj morpheme -s- in fin^{00}-i-s-Ø.pst.sbj.12sg.3pl (*finisse(nt)*) (3b) is recognized by French grammarians (see Grevisse 1961: 588–589). These grammatical forms are systematically homophonous in Conj. 2 verbs, but since they have different morpheme constituency they are not homonymous.

Irregular verbs have largely the same agglutinative suffixations as Conj. 1 and 2 verbs; but they have different allomorphs in the Preterite and Future systems; and they are characterized by stem mutations and truncations, as well as by stem suppletion. The lexical distribution of these features is irregular. A systematic presentation of the whole picture would exceed the space available here. The following subregularities and a few illustrations in (4) will suffice for the present purpose.

(4)   a.   Vowel mutations, homologous to those in Conj. 1, but involving different vowels. /e/ → /jɛ/, /ə/ → /wa/, /y/ → /wa/, /u/ → /ø ~ œ/; phonotactically, /jɛ/ and /wa/ count as single segments. In some verbs the vowel mutation affects Prs.ind.123sg.3pl; e.g., *acquérir* 'get': aker-õ.1pl, akjɛr-Ø.3sg, akjɛr-Ø.3pl (*acquérons, acquiert, acquièrent*), *mourir* 'die': mur-õ, mœr-Ø, mœr-Ø (*mourons, meurt, meurent*).

      b.   Coda truncation in Prs.ind.sg; e.g., *dormir* 'sleep': dɔrm-õ.1pl, dɔrm-Ø.3pl, but dɔr^0-Ø.3sg (*dormons, dorment, dort*); *bouillir* 'boil': buj-õ, buj-Ø, bu^0-Ø (*bouillons, bouillent, bout*); *lire* 'read': liz-õ, liz-Ø, li^0-Ø (*lisons, lisent, lit*).

      c.   Coda truncation in Prs.ind.sg also occurs in some verbs with vowel mutation (but not in Prs.sbj.1–3sg): *recevoir* 'receive': rəsəv-õ.1pl, rəswav-Ø.3pl, rəswa^0-Ø.3sg (*recevons, reçoivent, reçoit*); *devoir* 'ought; owe': dəv-õ, dwav-Ø, dwa^0-Ø (*devons, doivent, doit*); *boire* 'drink': byv-õ, bwav-Ø, bwa^0-Ø (*buvons, boivent, boit*); *mouvoir* 'move': muv-õ, mœv-Ø, mø^0-Ø (*mouvons. meuvent, meut*).

      d.   Rhyme truncation in Pst.ind–sbj, as in Conj. 2; e.g., *acquérir*: aker-õ.1pl, ak^{00}-i-Ø.3sg (*acquérons, acqui*); *voir* 'see': vwaj-õ, v^{00}-i-Ø (*voyons, vi*); *recevoir*: rəsəv-õ, rəs^{00}-y-Ø (*recevons, reçu*); *devoir*: dəv-õ, d^{00}-y-1Ø1 (*devons, du*); *boire:* byv-õ, b^{00}-y-Ø (*buvons, bu*); *lire*: liz-õ, l^{00}-y-Ø (*lisons, lu*); *savoir* 'know': sav-õ, s^{00}-y-Ø (*savons, su*).

      e.   Preterite allomorphy. -i- ~ -y-; e.g., (i) -i- in both Pst.ind-sbj and Pst.ptcp: e.g., *dormir*: dɔrm-i-Ø, dɔrm-i (*dormi, dormi*); *bouillir*: buj-i-Ø, buj-i (*bouilli, bouilli*); (ii) -i- in Pst.ind-sbj, -y- in Pst.ptcp: *voir*: v^{00}i-Ø and v^{00}-y (*vi, vu*), *rompre* 'break': rõp-i-Ø, rõp-y (*rompi,*

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rompu), *battre* 'beat': bat-i-Ø, bat-y (*batti*, *battu*). (iii) -y- in both Pst.ind-sbj and Pst.ptcp: *lire*: l^{00}-y-Ø and l^{00}-y (*lu*, *lu*), *courir* 'run': kur-y-Ø and kur-y (*couru*, *couru*).

f. Interfixed consonants in Inf and/or Fut–Cond; e.g., *connaître* 'know': kɔnɛs-õ, kɔnɛ^{0}-t-r.inf (*connaissons*); *coudre* 'sew': kuz-õ, ku^{0}-d-r (*cousons*); *moudre* 'grind': mul-õ, mu^{0}-d-r (*moulons*); *tenir* 'hold': tən-õ, tjẽ-d-r-ɛ.cond.3sg (*tenons*, *tiendrait*); *vouloir* 'will, want': vul-õ, vu^{0}-d-r-ɛ (*voulons*, *voudrait*).

The features in (4)-(4f) are relevant to many irregular verbs. They define some stem allomorphy indicating desinential grammatical content and some desinence allomorphy indicating the lexical content of the stem: This is fusion.

The following examples in (5) illustrate wordforms that combine lexical and grammatical content: Introflection.

(5) a. A specific stem for Prs.sbj: *aller* 'go': al-õ.prs.ind.1pl but aj-Ø.prs.sbj.123sg.3pl (*allons*, *aille(nt)*); *vouloir*: vul-õ, vøl.prs.ind.3pl but vœj-Ø (*voulons*, *veulent*, *veuille(nt)*); *savoir*: sav-õ, sav-Ø but saš-Ø (*savons*, *savent*, *sache(nt)*).

b. A specific stem for Fut and Cond. *tenir*: tən-õ, tjẽ-d-r-e.fut.1sg (*tenons*, *tiendrai*), *aller*: al-õ, ir-e (*allons*, *irai*), *voir*: vwaj-õ, vɛr-e (*voyons*, *verrai*).

c. A specific wordform for Pst.ptcp (feminine endings in parentheses). *Offrir* 'offer': ɔfr-õ, ɔfɛr(-t) (*offrons*, *offert*); *ouvrir* 'open': uvr-õ, uvɛr(-t) (*ouvrons*, *ouvert*); *mourir*: mur-õ, mɔr(-t) (*mourons*, *mort*); combined with rhyme truncation: *acquérir*: aker-õ, ak^{00}-i(-z) (*acqérons*, *acquis*); *mettre* 'put': mɛt-õ, m^{00}-i(-z) (*mettons*, *mis*); *écrire* 'write': ekriv-õ, ekr^{00}-i(-t) (*écrivons*, *écrit*).

d. Other grammatically specific stems or wordforms. (i) *haïr* 'hate': ais-õ, ɛ.prs.123sg (*haïssons*, *hait*); (ii) *pouvoir* 'can, be able': pɥi.prs.ind.1sg, pɥis–.prs.sbj (*puis*, *puisse(nt)*); (iii) *savoir*: sav–.prs.ind.pl/inf, se.prs.ind.sg, saš–prs.sbj/ptcp, s^{00}–.pst.ind/sbj/ptcp, so-r–.fut/cond (*savons*, *savais*, *sais*, *sache(nt)*, *sachant*, *sus*, *saurai*); (iv) *aller*: vɛ.prs.ind.1sg, va.23sg, võ.3pl, aj–.prs.sbj, ir–.fut/cond (*vais*, *va*, *allons*, *vont*, *aille*, *ir-ai*); (v) *avoir* 'have': e.prs.ind.1sg, a.23sg, õ.3pl, ɛ.prs.sbj.123sg.3pl, y-.pst/pst.ptcp, or–.fut/cond (*avons*, *ai*, *a*, *ont*, *aie*, *eus*, *aurai*); (vi) *être* 'be': sɥi.prs.ind.1sg, ɛ.23sg, som.1pl, ɛt.2pl, sõ.3pl, swa–.prs.sbj, fy–.pst,

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εt−.inf, sər−.fut/cond, ete.pst.ptcp (*suis, est, sommes, sont, sois, fus, êt-re, se-r-ai, été*); (vii) *faire* 'do, make': fəz−.prs.ind.1pl/ptcp/impf, fɛ.prs.123sg/inf, fɛt.prs.ind.2pl, fõ.3pl fas−.prs.sbj, fi.pst, fər−.fut/cond, fɛ(-t).pst.ptcp (*faisons, fait, faites, font, fasse(nt), fi, ferai, fait*).

The irregular lexical distribution of the many subregularities in the morphology of these verbs makes for some complexity; in Stump & Finkel's (2017) approach, French has 72 conjugations. Still, it is clear that features (4.a–f) produce allomorphy, in stems or suffixes, that amounts to cross-boundary indexes; they exemplify the technique of fusion. The examples in (5) are stems or wordforms that combine lexical and grammatical content; this is introflection. Many irregular verbs have no introflective forms at all, but several have a handful or more.

Table 14: French conjugation in typological perspective

Analytic	Obligatory pronominal subject clitics. Passive: *être* + p.p.p.; Perfect: *avoir*/*être* + p.p.p.; Auxiliated Future: *aller* + inf; Causative: *faire* + inf.
Agglutination	Only productive type: *chanter*; regular, prosodically conditioned stem-internal V-mutations (type *céder–cède*).
Fusion	Stem allomorphy. V-mutations, coda truncation, rhyme truncation, V/C-interfixation: *finir*: finis fini^0 fin^{00}-i-; *mouvoir*: muv mœv mø^0 m^{00}-y-; *recevoir*: rəsəv rəswav rəswa^0 rəs^{00}-y-; *devoir*: dəv dwav dwa^0 d^{00}-y-; *lire*: liz li^0 l^{00}-y-; *écrire*: ekriv ekri^0 ekr^{00}-i-. Lexically conditioned suffix allomorphy: Pst -e/a/ɛ-, -i-, -y-, P.p.p. -e-, -i-, -y-; Inf -e, -r, -ir, -war.
Introflection	*haïr*: ɛ.prs.sg; *pouvoir*: pɥi pɥis; *vouloir*: vœj; *savoir*: se saš– s– sor–; *aller*: vɛ va võ aj– ir–; *faire*: fəz– fɛ– fɛt fõ fas– f– fɛ(-t) fər-; *avoir*: e a õ aj– y– or–; *être*: sɥi ɛ som ɛt sõ swa– f– ete sər–; lexicalized Pst.ptcp: *mɔr(-t), ɔfɛr(-t), mi(-z), ekri(-t), aki(-z)* ....

In Table 14, only the Passive is old; the other analytic formations have developed since the early Middle Ages. The productive, agglutinative pattern is the descendant of the Latin productive Conj. 1. Among the fusional verbs only the regular but unproductive *finir* conjugation continues a productive Latin formation (Late Lat. *finīscō–finīvī–finīre*). The other fusional patterns as well as all the

introflective ones go back to pre-Latin formations that had ceased to be productive in classical Latin; this is true also of some post-Latin suppletive verbs, e.g., Fr. *aller* (< *ambulāre*, *vadere*, *īre*) and *être* (< *esse*(*re*), *stare*).

The analytic formations are of different age. But the synthetic part of the paradigm largely reflects the historicity of the system.

2.3 Latin conjugation

The hierarchy of Latin verbal categories was briefly summarized in (2), repeated here as (6).

(6) PERSON] NUMBER] TENSE] ASPECT] MOOD] VOICE]

In Latin, verbal inflection is organized in a paradigm of four conjugation classes, traditionally numbered 1 to 4. Conj. 1 is fully productive, Conj. 4 less so; Conj. 2 and 3 are unproductive, the latter, with the exception of inchoative verbs formed with the suffix *-sc-* (*senēscō* 'age', Late Lat. *finīscō* 'finish').

Basic-stem formation. Verb stems are derived from lexical morphemes with interfixes (stem formatives), in Conj. 1 with -ā-, in Conj. 4 with -ī-, in Conj. 2 with -ē- (~ -Ø- ~ -i-; see below). In Conj. 3, some basic (Infective) stems are derived with several lexically conditioned affixes, other stems are bare, e.g., interfixed (*cap-i-ō* 'catch'), infixed (*ru-m-p-ō* 'break'), and bare stem (*ag-ō* 'lead'). The interfixation, being lexically conditioned, is fusional derivation. Verb stems serve as bases for inflection for Voice, Mood, Aspect, Tense, Number and Person as well as the derivation of a roster of deverbal nominal (Infinitive, Gerund), adjectival (Gerundive, Present and Past Participle), and adverbial (Supines 1 and 2) derivatives, as well as deverbal verbs (e.g., frequentative, desiderative). Here we focus on the obligatory verbal categories.

Voice: In the Passive, the Perfective tenses are analytic (auxiliary 'be' + P.p.p.); in the Infective tenses, Passive morphs are joined with Participant (Person/Number) exponents (see below) (7g).

Mood: In the Subjunctive there is no distinct Future or Future perfect; but Subjunctive is expressed cumulatively with the other tenses (see below). In the Imperative there is no Perfective aspect, no Imperfect tense, only second person forms; the Future is expressed by the suffix -to-. Negative Imperative is auxiliated, *noli* 'do not' + Inf.

Aspect: In Conj. 1, 2, 4 Infective stems are identical with the Inf stem. In Conj. 1 and 4, the Perfective exponent is -v-, in Conj. 2, where the class suffix is -Ø- in the Perfective, the suffix is -u-: the -v- ~ -u- alternation is phonologically conditioned: it is agglutinative (7).

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In Conj. 3 Perfective stems are related to Infective stems by (i) deaffixation (*cap-i-ō–cēp-ī*, *ru-m-p-ō–rūp-ī*), (ii) vowel mutation and/or (iii) quantity change (*ag-ō–ēg-ī*), (iv) reduplication (*curr-ō–cu-curr-ī* 'run'), (v) a combination of some of these (*ta-n-g-ō–te-tig-ī* 'touch'), (vi) affixation (*scrīb-ō–scrīp-s-ī* 'write', *ping-ō– pinx-ī* 'paint'), or (vii) invariant-stem inflection (*scand-ō–scand-ī* 'ascend'). Types (i)–(v) are fusional: the stem allomorph points to the Perfect desinences; (vi) and (vii) are agglutinative, (vi) with an overt -s-, (vii) with zero Perfect suffix.

(7) a. Present. Conj. 1 *amā-re*.inf., *amā-v-ī*.prs.pfv.1.sg; Conj. 2 *monē-re*, *mon-u-ī*; Conj. 3 *capi-ō*, *cēp-ī*; *ag-ō*, *ēg-ī*; Conj. 4 *audī-re*, *audī-v-ī*.

   b. Past. Conj. 1 *amā-b-a-m*.pst.infv, *amā-v-er-a-m*.pst.pfv; Conj. 2 *monē-b-a-m*, *mon-u-er-a-m*; Conj. 3 *capi-ē-b-a-m*, *cēp-er-a-m*; *ag-ē-b-a-m*, *ēg-er-a-m*; Conj. 4 *audi-ē-b-a-m*, *audī-v-er-a-m*.

   c. Future. Conj. 1, 2 *amā-b-ō*.fut.infv, *amā-v-er-ō*.fut.pfv; *monē-b-ō*, *mon-u-er-ō*; *vs.* Conj. 3, 4 *capi-a-m*, *...-e-s*, *...-e-nt*, *cēp-er-ō*; *ag-a-m*, *ēg-er-ō*; *audi-a-m*, *audī-v-er-ō*.

   d. Prs.subj *am⁰-e-m, mone-a-m, capi-a-m, audi-a-m*; Impf.subj *amā-r-e-m, monē-r-e-m, cap-er-e-m, audī-r-e-m*; Prf.subj *amā-v-er-i-m, mon-u-er-i-m, cēp-er-i-m, audī-v-er-i-m*; Plup.subj *amā-v-iss-e-m, mon-u-iss-e-m, cēp-iss-e-m, audī-v-iss-e-m*.

   e. Conj. 1: *amā-re*.inf. but *am⁰-ō*.prs.ind.1sg, *am⁰-em*.prs.sbj.1.sg.

   f. Prs *amā-s*.2sg, *ama-t*.3sg, *amā-mus*.1pl, *amā-tis*.2pl, *ama-nt*.3pl.

   g. Conj. 1: *amā-re*.inf, *amā-v-ī*.prf.1.sg, *amā-t-us*.pst.pass.ptcp; Conj. 2: *monē-re, mon-u-ī, moni-t-us*; Conj. 3 *cap-e-re, cēp-ī, cap-t-us*; Conj. 4: *finī-re, finī-v-ī, finī-t-us*.

   h. *am⁰-o-r, amā-r-is, amā-t-ur, amā-m-ur, amā-mini, ama-nt-ur*.

Tense: Indicative: In both aspects, Present tense has a zero exponent. Past Infective (Imperfect) and Perfective (Pluperfect) are expressed by -b-ā- and -er-ā-, respectively; in Conj. 3, 4 the Infective -b- is affixed to an -ē- interfix (7b). Future Infective (Future) in Conj. 1, 2 is expressed by -b-ō/i/u- and Future Perfective (Future Perfect) of all verbs, by -er-ō/i/u-. In Conj. 3, 4 Future Infective is expressed by -a/e- (7c). The structure of all these forms is transparent and mainly agglutinative. The -b- ~ -er- allomorphs ('nonPresent') indicate Aspect; the allomorphy is fusional. The -b- vs −a/e- allomorphy in the Infective Future indicates Conj. class; in Conj. 3, 4 the −a- ~ -e- allomorphy indicates Person (-a-m, -e-s, ...): both these alternations are fusional.

In the Subjunctive, Present is expressed by ^{0}-e- in Conj. 1, otherwise by -a-; Imperfect is expressed by -r-e- in Conj. 1, 2, 4 and by -er-e- in Conj. 3: phonological conditioning. Perfect is -er-i- and Pluperfect, -iss-e- (7d). In sum, Tense is largely expressed agglutinatively, but indicates Mood and Aspect: Fusion.

Person and Number allomorphy is conditioned by Voice, Aspect and Tense (7e).

In the Active Participant desinences, separate plural exponents can be recognized in the final -s of -mu-s.1pl, -ti-s.2pl, and in the longer desinence -nt.3pl vs -t-.3sg (7f). Passive suffixes are partly fused with Participant desinences: -or.1sg.pass, -r-is.pass.2sg, -t-ur.3sg.pass, and -nt-ur.3pl.pass are agglutinative; in -m-ur.1pl.pass, Person and Number are cumulative; in -mini.pass.2pl, similarly, Voice, Person, and Number are cumulative (7g): Fusion.

In the Perfective Present (the Perfect), -ī.1.sg is an covariant of the Infective Present and Future -ō.1sg and the default -m.1sg. The desinences -is-tī.2sg and -is-ti-s.2pl contain the Perfect suffix -is- ~ -er-; -ēre.3pl is cumulative: Fusion.

Phonotactic and phonological adjustments. In the Infective, Conj. 1 interfix -ā- is truncated before vocalic endings (7e) and exemplifies a general alternation in quantity phonologically conditioned by following desinences (7f). The long interfix vowels of Conj. 2, 4 shorten in hiatus, e.g., *monē-re*.inf *mone-ō*.prs.infv.1sg, *finī-re*, *fini-ō*. Inflection within each of the aspects is fairly transparent.

Among the irregular verbs there are instances of (i) stem suppletion yielding wordforms that combine lexical and grammatical content, (ii) stems with ambiguous aspect (*pluit*.prs/prf.3sg 'rains/rained'), and (iii) a few stems with aspect or voice meaning that overrides that of their inflection, e.g., *ōd-ī* 'hate', *me-min-ī* 'remember' (Infective meaning despite Perfective form), *ūt-or* 'use', *fru-or* 'enjoy' (Active meaning despite Passive form): Introflection.

The typological paradigm of Latin verb inflection is in Table 15.

In the typological paradigm (Table 15) I leave aside basic-stem formation to focus on obligatory grammatical categories. The analytic formations, the mainly agglutinative productive conjugations, the fusional Conj. 3 and the introflective suppletive verbs make for an apparent historical perspective. The unproductive patterns reflect (original aorist and perfect) formations from the distant past of the language. The productive formations may have ancient ancestors too (Sihler 2010), as may the Perfective Passive. But in the synchronic view, the transparent productive patterns of inflection and the unproductive ones form a clear reflection of the historicity of the system of conjugation.

Table 15: Latin conjugation in typological perspective

Analytic	Auxiliated Perfective Passive and Perfective of deponent verbs: 'be' + Pst.pass.ptcp; auxiliated Future: 'be' + Fut.ptcp
Agglutination	Suffixal Perfective -v-/-u- in Conj. 1, 2, 4. Regular Tense and Participant inflection within each aspect. Mainly agglutinative; some phonotactic and phonological adjustments.
Fusion	Tense and Indicative vs Subjunctive are cumulative; Tense suffixes indicate Aspect; Conj.3, 4 Future -a/e- allomorphy indicates person; P.p.p.: -t- ~ -s-, e.g., *mittō–missus, cadō–cāsus, tendō–tensus*. Participant desinences: Some indicate Aspect; some are cumulative, especially Passive. Unproductive Perfective stem formation (Conj. 3): Types *capiō–cēpī, rumpō–rūpī, agō–ēgī, currō–cucurrī, tangō–tetigī*, ….
Introflection	(i) Suppletion: *ferō–tulī–lātum, tollō–sustulī–sublātum*; *sum, es-, sunt, eram, fuī, possum–potuī*; *volō, vīs, vult, velle* …; (ii) Stems combining lexical and grammatical content, despite inflection: *ōdī*; *frūor*

2.4 Russian conjugation

The hierarchy of obligatory verbal categories in Russian (7) (Jakobson 1956a) is similar to that of Latin:

(8) PERSON] NUMBER] TENSE] ASPECT] MOOD] VOICE]

VOICE. The Passive is analytic: 'be' + Pst.pass.ptcp; the Passive–middle voice is agglutinative, expressed by a fixed verbal clitic with phonologically conditioned allomorphy (=s'a ~ =s').

MOOD. The Irrealis is agglutinative; it is expressed by Past tense or Infinitive plus the movable enclitic =by. The Imperative–Hortative is inflected for Person and enclitic Number (=te; see below). The clitics follow person, gender, and (in participles) case desinences; possible clitic orders are: *=sja/s'=by, =te=s'*.

ASPECT. Russian aspect is often characterized as derivational (thus Wiemer, this volume). It is in fact expressed by stem affixation, but Aspect differs from all lexical derivational categories in the language by being an obligatory grammatical category.

In a discussion of morphological techniques a first distinction must be made between the non-obligatory semantic categories of essentially monoaspectual 'procedural' verbs[2], which will not be discussed here. We will focus on the 'basic' non-procedural verbs. As Imperfectives these represent states or activities, and as Perfectives they represent results of activities.

The foundation of this lexico-grammatical category is a large and open class of simplex Imperfective verbs (9a) and a few dozen simplex Perfective verbs (9b) (Issatschenko [Isačenko] 1962: 352–355, 381–385). These two groups of primary simplicia, in which each lexeme combines lexical and aspectual meaning, can be considered introflective. Secondary Perfective verbs are formed from simplex Imperfectives by prefixation (Janda et al. 2013). In (9c) perfectivization is agglutinative. Secondary Imperfective verbs are formed from both primary and secondary Perfectives by suffixation (-a, -va, -iva), regularly accompanied by mutation of stem vowel and/or stem-final consonant and stress displacement. In (9d) imperfectivization is fusional. It must be acknowledged that the vast majority of Russian verbs are old and replete with codified semantic extensions. But the processes of Perfectivization (9c) and Imperfectivization (9d) are perfectly productive and apply to neologisms.

(9)   a.   Primary Imperfective. E.g., *pisá-t'* 'write', *rabóta-t'* 'work';
      b.   Primary Perfective. E.g., *liší-t'* 'deprive', *da-t'* 'give';
      c.   Secondary Perfective. E.g., *na-pisá-t'* 'write', *s-pisá-t'* 'copy', *pod-pisá-t'* 'sign', *za-rabóta-t'* 'earn (lit.: work in)', *pro-rabóta-t'* 'study, analyze (lit.: work through)';
      d.   Secondary Imperfective. E.g. *liš-á-t'* 'deprive', *da-vá-t'* 'give', *s-pís-yva-t'* 'copy, *pod-pís-yva-t'* 'sign', *za-rabát-yva-t'* 'earn', *pro-rabát-yva-t'* 'study, analyse'.

Tense. The two tenses are Past and Present. The verb *byt'* in addition has a future tense *búd-u* 'will be', which serves as auxiliary with Imperfective verbs to present a state or acivity as future. The morphological present of perfective verbs regularly has future reference.

Participant categories. Tense suffixes are followed by participant suffixes, Person and Number in the Present tense, Gender or Number in the Past tense. These are mainly agglutinative, but Person and Number are cumulative in the Present.

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[2]R *sposoby glagol'nogo dejstvija*; Issatschenko [Isačenko] 1962: 385–418; https://russkiyyazik.ru/889/

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To these can be added the deverbal (nominal) Infinitive, (adjectival) participles, and (adverbial) gerund. Their expression of Aspect and Tense (or Taxis; Jakobson 1956a) is fusional.

A key morphophonemic fact of Russian verb inflection is that Infinitive and Past endings begin with consonants, whereas Present and Imperative endings begin with vowels (in the Imperative, alternating with -Ø). The endings entail different phonotactic adjustments of stems that end in a consonant and stems that end in a vowel.

There are four productive inflection classes (10a)-(10d). The majority of Russian verbs, which includes most secondary Perfectives, most primary, and all secondary Imperfectives (10a), have a stem in ...a- or ...e- in Infinitive and Past and a stem in ...aj- or ...ej- in Present and Imperative. There is evidence from historical morphology and from child speech that synchronically the /j/ is inserted between a stem-final vowel and a vocalic ending (cf. Andersen 1980). The /j/ epenthesis counts as a phonotactic adjustment, compatible with agglutination. The three other productive patterns are fusional: A basic vowel-final stem is modified in Present and Imperative by a suffix-allomorph replacement (10b), by truncation (10c), or by truncation and a mutation of the Prs.1sg stem-final consonant (10d). The mutation is one of several consonant mutations that reduce the number of phonological distinctions in specific derivational and inflectional environments (Andersen 1995), and which are regular in verb inflection.

(10) a. *déla-t'–déla-j-ut* PRS3PL 'do, make', *belé-t'–belé-j-ut* 'whiten';

   b. *tolk-ová-t'–tolk-új-ut* PRS3PL 'interpret';

   c. *mók-nu-t'–mók-n⁰-ut*.PRS3PL 'get wet';

   d. *prosí-t'–proš⁰-ú*.PRS1SG 'ask'

There are (synchronically) underived verbs that pattern with the productive formations (10a) and (10d). In addition to these, there are some two dozen groups of additional simplex verbs with unproductive subregularities. In those, stem allomorphy indicates the grammatical content of endings, that is, they exemplify fusion. A few of them have suppletive stems, e.g., *sést'* 'sit down': s'é-.inf/pst, s'ád-.prs/impv; (*po*)*nját'* 'understand': -n'a-.inf/pst, -jm-.prs-impv.

Besides these suppletive verbs there are some that differ from the regular alternation of Infinitive–Past stem and Present–Imperative stem: *éxat'* 'ride': jéxa–.inf/pst, jéd-.prs, pojezžáj-.impv; *idtí* 'go, walk': i-.inf, id-.prs/impv, šol-.pst; *léč'* 'lie down': l'é-.inf, l'ág-.prs/impv, l'og-.pst; *ést'* 'eat': jé- default, jed'-.prs.pl; *dát'* 'give': da- default, dad-.prs.pl, daj-.impv; *být'* 'be': jést'.prs.3sg, sút'.prs.3pl (bookish), búd-.fut.

These suppletive stems cooccur with grammatical morphemes in concatenations that can be viewed as fusional. But some of their alternant stems are limited to, and hence are indexes of, specific grammatical content. In practical terms, then, they can be considered introflective; compare the similarly ambiguous status of the English Preterite 2 verbs (Section 3, note 3).

Table 16: Russian verb inflection in typological perspective

Analytic	Passive: 'be' + Pst.pass.ptcp.	Irrealis: Past or Inf + *=by*
	Passive-Middle: verb + *=sja/s'*	Futures: *búdut*, *stánut* + Inf
Agglutination	Aspect: Prefixal Perfectivization;	Infinitive ...V-t'.
	Present, Imperative: /j/ epenthesis: Productive: *déla-t'–déla-j-ut*, *belé-t'–belé-j-ut* (10a); unproductive *zna-t'* type (>20)	Past. ...V-l- + Gender/Number
Fusion	Aspect: Suffixal Imperfectivization in /-a -va -iva/ with mutations and displacement; Productive: *tolk-ová-t'–tolk-új-ut*: suffix allomorphy (10b); *mók-nu-t'–mók-n^0-ut*: V truncation (10c); *prosí-t'–proš^0-ú*: V truncation and C mutation (10d). Unproductive: *víde-t'–víž^0-u* (> 50), *deržá-t'–derž^0-ú* (>30). Unproductive patterns (>180 verbs): *davá-t'* (+ 2 more), *krý-t'* (+ 6), *bí-t'* (+ 4), *ží-t'* (+ 2), *dé-t'* (+ 3), *žá-t'* (+ 4), *ple-stí* (+ 17), *pé-č'* (+ 12), *nes-tí* (+ 6), *teré-t'* (+ 4), *móknu-t'* (+ 59), *pisá-t'* (+ 50), *ždá-t'* (+ 9).	
Introflection	Aspect: Simplex Perfectives and Imperfectives. Irregular stem alternants (>20 verbs): jéxa–/jed–/pojezžaj–; i– /id–/šol–; l'é–/l'og–/l'ág–; s'é–/s'ád–; -n'a–/-jm–; -jé–/jed'–; da–/dad–/daj–; bi–/jést'/sút'/búd–.	

The synchronic overview of Russian verb inflection in Table 16 only partly corresponds to the historical perspective it suggests.

The analytic Futures are quite young, first attested in the 1300s, though as a category, with different auxiliaries, the analytic Future must have originated

before the 1000s (Andersen 2006). Also, the productive agglutinative verbs with /j/ epenthesis in the Present are likely younger than the unproductive fusional patterns. At the other extreme, the introflective verbs do include some of the oldest, and long since unproductive, formations, originally athematic (*ést'* 'eat', *dát'* 'give') and infixed presents (*léč'–ljágut* 'lie down', *sést'–sjádut* 'sit down').

But the agglutinative prefixation (serving Perfectivization) is as old as preverbs in other Indo-European languages; they were grammatized as Perfectivizers in recent prehistory. The fusional Imperfectivizing suffixation is specific to Slavic and cannot be much younger. Again, the agglutinative Russian Past tense developed as a Perfect in the Middle Ages, being regrammatized as a simple past no later than the 1200s, whereas the analytic Pst.pass with participles in -en- and -t- has ancient origins.

We are reminded of the English verb system, in which the fusional Preterite 2 is younger than the agglutinative Preterite 1, and the apparent historicity of the system to some extent is at odds with its known history.

3 Conclusion

In this study of paradigms of paradigms I have drawn attention to notable differences between the hierarchical structures constituted by paradigms of morphological categories (Section 1.1) and the mainly flat or mixed flat–hierarchical paradigms of exponent allomorphs (Section 1.2). Such language-particular paradigms of paradigms will long occupy students of morphology, and although they are language-particular a detailed study of them can be expected to yield insights into common and perhaps universal principles that underlie their organization.

Against this background I have looked at the presumably universal paradigm of morphological techniques that defines synchronic typological variation (Section 2). I have limited the definitions of these techniques to the bare bones (Table 1); a discussion of details will be offered elsewhere.

My aim in this regard has been twofold:

First of all, I wished to highlight the fact that synchronic typological paradigms may afford an extraordinary perspective on the historicity of inflectional systems. In each of the systems sketched here the typological paradigm points up the contrast between the less restricted, productive formations and the more restricted, unproductive ones, between the system's younger and older parts. This imprint of history by and large reflects the well-known Morphological Cycle (Hodge 1970). True enough, as emphasized in Section 2.1, a synchronic paradigm of morphological techniques is unlikely to directly reflect the historical development of the given system. For languages whose history we know it is clear that

besides a main-stream development from analysis to agglutination to fusion to introflection, there are many renewals that loop back from each of the synthetic types to structurally simpler techniques (Werner 1987, Igartua 2015).

Still, the perceived historicity of any typological paradigm similar to Tables 12 and 14–16 implies hypotheses about past developments. In any language that lacks a historical record, this perspective extends an invitation to historical linguists to uncover the actual historical past of the given language through internal reconstruction.

But more importantly, I wished to advocate for an approach to morphological description that acknowledges typological paradigms. In simple, practical terms, the paradigms of morphological techniques that can be observed in language after language show us that only an approach to morphological analysis that captures this synchronic variation can attain descriptive adequacy.

A theory of morphology that presumed all inflection to be agglutinative would be artificial and inadequate (Hockett 1954), not to say useless. A Word-and-Paradigm approach that operates with unanalysed wordforms as if all inflectional systems were introflective is no better. The recent advance into the dead end of Word-and-Paradigm theory by Stump & Finkel (2017) divides the wordforms of inflectional paradigms into stable and alternating fragments (termed "themes" and "plats") that are divorced from both lexical and grammatical content; e.g., Fr. *mouvoir* 'move': ᴍ- + -uvwar, -ø, -uv, -œv, ...; *mourir* 'die': ᴍ- + urir, -urõ, -œr, -ɔr; or *moudre* 'grind': ᴍᴜ- + -dr, -l, -ly...). This approach achieves descriptions that are truly meaningless.

Due attention to synchronic variation in inflectional morphology – stylistic, inflection-class, allomorphic, and typological – and to the innovations that give rise to such variation will convince the interested linguist of the priority – in the minds of speakers – of productive patterns over unproductive ones, of regular patterns over irregular ones, and of speakers' concern with ultimate elements of exponence and their correlations with elements of meaning (symbolic as well as indexical).

Since all such variation reflects the speakers' competence, it must be acknowledged in any theory of morphology, and recognized as an inomissible part of any adequate synchronic description.[3]

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4 Abbreviations

1	first person	LOC	locative
2	second person	LIT.	literally
3	third person	M	masculine
ABL	ablative	N	neuter
ACC	accusative	NOM	nominative
COND	conditional	P.P.P.	past passive participle
CONJ	conjugation	PASS	passive
DAT	dative	PFV	perfective
F	feminine	PL	plural
FR.	French	PLUP	pluperfect
FUT	future	PRF	perfect
GEN	genitive	PRS	present
IMPF	imperfect	PST	past
IMPV	imperative	PTCP	participle
IND	indicative	R	Russian
INF	infinitive	SBJ	subjunctive
INFV	infective	SG	singular
IPFV	imperfective	VL	voiceless
LAT.	Latin		

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Chapter 3

Formalizing paradigms in Construction Grammar

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Construction Grammar sees the language system to consist solely of conventional pairings of form and meaning, i.e. constructions. Constructions may be of any size and complexity, and they may be abstract (or schematic) to any degree. They may be templates for sentences, lexical items, inflectional morphemes, discourse patterns (Östman 2005) that organize whole texts or even genres, etc. However, the notion of construction seems incapable to capture patterns found within the grammar: systematic similarities between constructions and, notably, paradigms of different sorts. For instance, inflection paradigms consists of sets of constructions, but nothing in common varieties of Construction Grammar explains how those constructions join together to form a paradigm. The paper argues that in addition to constructions, the language system must also include specifiable relations which hold between the constructions of a language and which organize them into a functional system. Crucially such relations are necessary for the organization of paradigms, be they of morphological, syntactic or other nature. Relations between constructions within the grammar can be—and have previously been—described in terms of inheritance (e.g. Goldberg 1995), taxonomic and meronomic links (Croft 2001), and the like. However, such very abstract links can only capture simple relations between constructions. Yet, more complex relations, notably of an analogical nature, exist widely within the grammar of apparently all human languages. To capture such analogical relations, the paper uses the notion of *metaconstruction*, briefly introduced in Leino & Östman (2005). Metaconstructions may be thought of as generalizations of constructions, partly in the same sense as constructions may be seen as generalizations of actual expressions. It will be argued that such analogical relations, formalizable as metaconstructions, hold paradigms together and also facilitate both producing and interpreting complex expressions.

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1 Introduction

Construction Grammar sees the language system to consist solely of conventional pairings of form and meaning, i.e. constructions. Constructions may be of any size and complexity, and they may be abstract (or schematic) to any degree. However, the notion of construction seems incapable to capture patterns found within the grammar: systematic similarities between constructions and, notably, paradigms of different sorts.

Besides holding paradigms together, analogical relations also facilitate both producing and interpreting complex expressions and serve as a notable source of linguistic creativity and innovation. Systematic analogical structures often both show existing gaps in the language system and provide means of coining novel but instantly comprehensible ways of filling such gaps. The mechanism is ubiquitous in language, but it seems to lead to (conceived) paradigms only in certain parts of grammar. This, in turn, may be revelatory of the nature of paradigms.

If one takes as starting point the claim, often made in Construction Grammar (e.g. Fillmore & Kay 1995: 1·15–16, Goldberg 1995: 1–5, Croft 2005: 273–275), that grammar consists of constructions, an obvious question arises: How are the constructions of a given language organized? Is the grammar of a given language merely a "warehouse" or an inventory of constructions, from which a language user picks out whatever is necessary to produce an utterance?

Cognitive Grammar, a close relative of Construction Grammar,[1] conceives of grammar as a *structured inventory of linguistic units* (Langacker 1987: 73). In this view, grammar is organized mainly in terms of *categorization:* the inventory of linguistic units is structured into schematic networks. The relation of *symbolization* also structures the inventory by establishing correspondencies between particular semantic structures and phonological structures: a symbolic relation is necessarily present in every linguistic unit of a language, as these units are taken to be inherently bipolar, i.e. to represent a conventionalized correspondence of form and meaning. (For a more detailed discussion, see Langacker 1987: 73–76.)

Cognitive Grammar greatly resembles Construction Grammar in many important aspects (cf. J. Leino 2005a, Croft 2001: 6–7), and Langacker's characterization of grammar could therefore conceivably be rephrased as a *structured inventory of grammatical constructions.* And, indeed, Tomasello (2006: 258) does so (with regard to "Cognitive-Functional Linguistics" in general, but explicitly including Construction Grammar in this notion): "In this approach, mature linguistic competence is conceived as a structured inventory of meaningful linguistic

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[1]Some, e.g. Goldberg (2006), go as far as to consider Cognitive Grammar a variant of Construction Grammar.

constructions—including both the more regular and the more idiomatic structures in a given language (and all structures in between)."

Thus, besides constructions, the language system must include specifiable relations which hold between the constructions of a language and which organize them into a functional system. Such relations have been described in terms of inheritance (e.g. Goldberg 1995), or taxonomic and meronomic links (e.g. Croft 2001). However, such very abstract links can only capture simple relations between constructions. More complex relations, notably analogical ones, exist widely within the grammar of apparently all human languages. Analogical relations may be captured by the notion of metaconstruction (briefly introduced in Leino & Östman 2005).

It is not clear, however, how either Cognitive Grammar or Construction Grammar would express relations between expression types which show obvious similarities but which cannot be said to be in a schematic relation to each other. For example, English active and passive sentences are obviously related expression types, but neither is schematic with regard to the other. Similarly, English assertive sentences and questions are related in a very similar manner, but this relationship cannot be captured in terms of categorization or schematicity either:

(1) English

    a. John built the house.

    b. The house was built by John.

(2) English

    a. Lisa has met my wife

    b. Has Lisa met my wife?

In both cases, it is clear that the (a) and (b) sentences are related to each other. This relatedness is not incidental but systematic: it is not only the sentences that are related but the sentence *types,* i.e. the constructions—or, in Cognitive Grammar terms, constructional schemas—behind the sentences that are related. However, this relatedness cannot be captured as an organizing feature of the grammatical system with the tools provided by Cognitive Grammar.[2]

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[2]This is, of course, not to say that Cognitive Grammar is unable to analyze these sentences or even point out the essential similarities between them. The problem that I wish to point out concerns the internal organization of the grammar and the lack of tools in both Cognitive Grammar and Construction Grammar to describe this internal organization in sufficient detail and systematicity.

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Essentially the same situation holds for Construction Grammar as well. Relations between constructions within the grammar can be—and have been—described in terms of inheritance links (e.g. Goldberg 1995: 73–81, Michaelis & Lambrecht 1996: 235–245, Croft 2001: 53–57). However, such very abstract links only capture certain rather simple relations between constructions, in terms of what is made of what, and what is a part of what. In addition to the aforementioned inheritance links, a complementary mechanism should be taken into use to capture such relations which cannot be described by means of simple networks of schematicity and part–whole relations.

Recently Diessel (2019) has presented a greatly improved way of representing inter-constructional relations within the grammar. His book specifically devotes to the analysis of grammar as a complex network of interconnected constructions, and greatly improve our understanding of that challenging topic. He also describes (e.g. pp. 18–19 & chap. 11) paradigms in terms of emerging networks of constructions, a view which I shall also adopt in the following. Yet, I feel, there is still more to be said about different types of relations between constructions, and the complex architecture of grammar.

As we saw above, there are other kinds of similarities between the constructions of a language as well. Notably, relationships of an *analogical* nature exist widely within the grammar of apparently all human languages. If the theoretical machinery that we use isn't sufficient for capturing these similarities, then the description of the language in question will miss possible generalizations, and will thereby not conform to the requirement of full coverage spelled out by Kay (1995).

To capture such generalizations, I shall make use of the notion of *metaconstruction,* briefly introduced in J. Leino (2003) and Leino & Östman (2005). Metaconstructions may be thought of as generalizations of constructions, partly in the same sense as constructions may be seen as generalizations of actual expressions. Any given construction may be related to other constructions in the language by means of such metaconstructions. Ultimately, the language system will not appear as an unstructured list of constructions, but rather as a structured system in which a certain kind of order prevails.

One notable point of relevance for metaconstructions are paradigms of different sorts within the language system. For the purposes of this paper, a paradigm is seen as a set of constructions which has the following properties:

1. The members of the paradigm, i.e. the constructions which make up the paradigm, are alternatives to one another in a given linguistic context.

2. The set of constructions together make up a structured inventory of ways to express variations of a given meaning in that context.

3. The set of constructions forms a meaningful whole which "makes sense" to native speakers of the language.

Metaconstrucions have a notable role not only in the internal organization of grammar but also in the production of novel types of utterances. In other words, they do more than merely statically organize the system in a synchronic sense: they also serve as dynamic and diachronically relevant instructions of how to form new constructions. More specifically, metaconstructions capture analogical relationships, which have been shown to be of great importance for the internal organization of the language system and the creative use of constructions (e.g. Leino 2003: 260–284), as well as syntactic creativity in general (e.g. Tabor 1994: 202–205)—not to mention the importance of analogy in language and linguistic description more generally (cf. e.g. Bloomfield 1933 for a linguistic classic which emphasizes the importance of analogy, and Anttila 1977 and Itkonen 2005 for more general accounts of analogy in language).

2 Some cases in point

In what follows, I shall discuss two cases where analogical relations between constructions have a crucial role in the functioning of the language in question. The first case (also presented in Leino & Östman 2005), in Section 2.1, concerns an arising variation in Finnish subject and object case marking. The second one, in Section 2.2, is the relationship between assertions and questions referred to above, but in the context of the Swedish language. In addition, these sentence types will be discussed with regard to active and passive voice.

2.1 Metaconstructions and Finnish case marking

Finnish subject and object case marking provides a clear-cut example of how analogical relations between constructions affect the functioning of the language system. Briefly stated, Finnish is an accusative language, but it also has a peculiar ergative-like subsystem marked with the partitive case and related to the boundedness of the object, as well as the resultativity—or, more precisely, telicity—of the activity denoted by the predicate (for details, see e.g. P. Leino 1991, Karlsson 1999, Heinämäki 1984).

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For the purposes of this paper, we may state the following simplified rule of thumb: An object in Finnish is marked with the accusative case if the sentence is not negated and the activity denoted by the verb is telic, (i.e. if the activity is carried out completely). If the sentence is negated or the activity is atelic, the object is marked with the partitive case.

To further complicate the Finnish case marking system, the subject—which is normally in the nominative case—may also be marked with the partitive case. However, this is traditionally said to require that the following conditions be met:

- the sentence must be intransitive **AND**

- the sentence must be negated **OR**

- the subject must be a mass noun (or an abstract noun, or a plural) and unbounded.

In other words, transitive sentences in Finnish cannot, traditionally speaking, have a partitive subject. However, transitive sentences with partitive subjects do in fact show up sporadically, although normative grammars do not allow them and the vast majority of Finnish speakers find them ungrammatical, or awkward at best.

In terms of Construction Grammar, the Finnish language may be said to have a transitive sentence construction which licenses sentences like those in (3):[3]

(3) Finnish

    a. Lapset   rikkoivat   ikkunan.
        child-PL-NOM break-PST-3PL window-ACC
        'The children broke the/a window.'

    b. Miehet   kaatoivat   puut.
        man-PL-NOM cut-down-PST-3PL tree-PL-ACC
        'The men cut down the trees.'

This construction may be characterized schematically as in Figure 1:
or, in the traditional boxes-within-boxes notation as in Figure 2:

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[3]Finnish has a rich case inflection morphology. The following abbreviations are used in the examples to indicate morphological case: NOM=nominative, ACC=accusative, PAR=partitive, GEN=genitive, INE=inessive, ELA=elative, ILL=illative, ADE=adessive, TRA=translative, INS=instructive, ABE=abessive. Ablative, allative, essive and comitative do not occur in the examples.

3 Formalizing paradigms in Construction Grammar

$$[S_{\text{NOM}} \; V \; O_{\text{ACC}}]$$
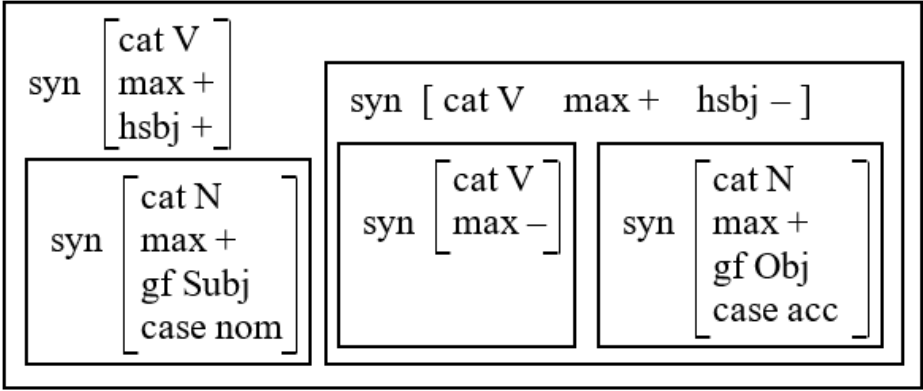
Figure 1: Transitive sentence

Figure 2: Transitive sentence, box notation

In other words, this construction licenses transitive sentences with a nominative case subject and an accusative case object.

The Finnish language also has an intransitive sentence construction which licenses sentences like the following:

(4) Finnish

    a. Lapset   leikkivät pihalla.
       child-PL-NOM play-3PL yard-ADE
       'The children are playing in the yard.'

    b. Puut   kaatuivat   myrskyssä. „The trees fell down in
       tree-PL-NOM fall-down-PAST-3PL storm-INE
       the storm.'

In (5a), we have here is a basic intransitive sentence with a nominative subject, whereas in (5b), we have here an intransitive sentence with a partitive subject:

(5) Finnish

    a. Pihalla   juoksee poikia.
       yard-ADE run-3SG boy-PL-NOM
       'There are boys running on the yard.'

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    b. Myrskyssä kaatui   puita.
        storm-INE fall-down-PAST-3SG tree-PL-PAR
        '(Some) trees fell down in the storm.'

The similarity between these two sentence types is all the greater due to the fact that, while Finnish allegedly has "free" word order (i.e. one that mostly expresses information structure rather than grammatical relations, see e.g. Vilkuna 1989), in a neutral context the partitive subject of the intransitive sentence follows the verb like the partitive object of the transitive sentence.

The constructions which license examples (4a) and (4b) are connected together by a metaconstruction which may be characterized by Figure 3:

$$[[S_{NOM} \; V \; X] \leftrightarrow [X \; V \; S_{PAR}]]$$

Figure 3: Metaconstruction between nominative and partitive subject

In Figure 3, *S* stands for the subject, NOM and PAR for the nominative and partitive case, *V* for the predicate verb, and *X* for a potential other argument. The same information may be expressed in the boxes-within-boxes notation (greatly simplified) as in Figure 4:
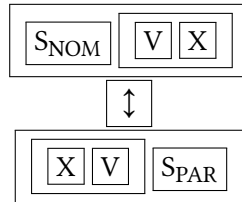

Figure 4: Metaconstruction between nominative and partitive subject, box notation

However, the Finnish language does not have a construction that is connected with this metaconstruction to the construction exemplified by the sentences (3a–b); i.e., as pointed out above, transitive sentences in Finnish cannot have partitive subjects. Yet, it is very easy to note, on the basis of that construction and this metaconstruction, that such a construction would have the form expressed in Figure 5 and Figure 6:

$$* \; [O_{ACC} \; V \; S_{PAR}]$$

Figure 5: Transitive sentence with partitive subject

This construction would license such sentences as those in (6a–b):

$$\boxed{\boxed{O_{ACC}}\ \boxed{V}\ \boxed{S_{PAR}}}$$
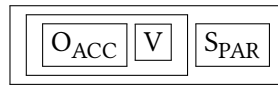
Figure 6: Transitive sentence with partitive subject, box notation

(6) Finnish

  a. *Pizzan   söi   poikia.
      pizza-ACC eat-PAST-3SG boy-PL-PAR
      '(Some) boys ate the pizza" or: „the pizza was eaten by boys"

  b. * Puut   kaatoi   miehiä.
       * tree-PL-ACC cut-down-PAST-3SG man-PL-PAR
      '(Some) men cut down the trees" or: „the trees were cut down by men"

In (6), the sentences have been marked as ungrammatical. However, a language user migh well wish to express a transitive event with an unbounded subject—which would rather naturally be coded as a transitive sentence with a partitive subject, if only this were grammatical in Finnish. In other words, the construction sketched out in Figure 5 and Figure 6 would be a natural tool for expressing such a meaning.

Since the language already has, so to speak, all the "ingredients" for such a construction, it would not be difficult at all to coin such a construction and start using it. And, in fact, this is precisely what is happening in the Finnish language at the moment. Sentences like in (6) do in fact show up not only in colloquial language but also in newspaper headlines and practically all registers of the Finnish language, though only very sporadically:

(7) Finnish

  a. *Tuhansia   Soneran   piensijoittajia   jätti
      thousand-PL-PAR Sonera-GEN minor.investor-PL-PAR leave-PAST-3SG
      käyttämättä   merkintäoikeutensa   Soneran
      use-INF3-ABE right.to.subscribe.for.shares-ACC-PS3SG/PL Sonera-GEN
      annissa.
      rights.offering-INE
      'Thousands of Sonera's minor investors left their share subscription
      right unused in the Sonera stock rights offering.' (*Helsingin Sanomat*,
      11/24/2001)

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> b. Minkä   maan   jalkapalloilijoita haki   viime
>   what-GEN country-GEN footboller-PL-PAR apply-PAST-3SG last
>   viikolla turvapaikkaa Suomesta?
>   week   asylum-PAR Finland-ELA
>   'What country where the football players from who sought asylum in
>   Finland last week?' (*Uutislehti 100* 8/25/2003)

In other words, what is happening in the Finnish language in this respect is essentially that the existing constructions, and generalizations based on them, are coupled in such a way that a new construction is taken into use. Actually, this is a rather ordinary case of *analogy,* and the metaconstruction I sketched out serves as an *analogy model* here.

Metaconstructions may thus have a role in diachronic change in that they motivate new constructions through several existing constructions and their systematic similarities and differences. However, two points of clarification are in place with regard to the role of metaconstructions in this process. First, they are not the direct cause of the change: the emergence of a new grammatical construction stems primarily either from the need to express a new kind of meaning or from the tendency towards systematicity and simplicity in grammar. Secondly, metaconstructions do not serve as the goal, or the target structure, in such a change. Rather, they provide a structured analogy which serves to motivate (perhaps initially single ad hoc utterances which may then give rise to) the target construction.

2.2 Assertions, questions, voice, and metaconstructions

As we saw with example (2) at the beginning of this paper, there is an obvious similarity between assertive sentences and questions in English. Swedish shows a very similar relationship between assertions and questions. This relationship is systematic rather than incidental; that is, the same similarity holds for each question and a corresponding assertion. Therefore, it is plausible to say that assertions and questions as sentence types, i.e. constructions, are related in some manner.

More generally, not only different kinds of interrogative sentences but sentence types in general form a wide network of different but interrelated constructions. This network includes assertive sentences, several types of question sentences, and a number of other sentence types as well. In fact, at a yet more general level, the entire grammar of a language may be represented as a network of interrelated constructions (perhaps much in the same manner as suggested in Diessel

2019) made up of individual constructions and relationships between them which organize the network. Often, as in the case of sentence types, there are parts of the network which may be seen as "subsystems" or, indeed, paradigms.

For the sake of clarity, I shall only refer to yes/no questions here. Of course, the discussion here holds (mutatis mutandis) for other types of questions as well, provided that we take each question type to be a separate construction.

Let us consider the following pairs of sentences:

(8) Swedish

    a. Du läste   boken.
      you read-PST book-DEF
      'You read the book.'

    b. Läste   du boken?
      read-PST you book-DEF
      'Did you read the book?'

(9) Swedish

    a. Kalle   har   ätit   soppan.
      Charlie have eat-PCP soup-DEF
      'Charlie has eaten the soup.'

    b. Har   Kalle   ätit   soppan?
      Have Charlie eat-PCP soup-DEF
      'Has Charlie eaten the soup?'

In ordinary terms, forming a yes/no question involves subject and object inversion (or, differently stated, verb-initial word order). This may be stated very simply with the following metaconstruction:

$$[[S \; V \; X] \leftrightarrow [V \; S \; X]]$$

Figure 7: Metaconstruction between assertive sentence and yes/no question in Swedish

Figure 7 only shows a very schematic structural association of the associated constructions (i.e. the assertive sentence construction and the yes/no question construction). A more detailed description of this metaconstruction would, of

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course, include information on the discourse functions of these constructions, on more specific structural properties of the constructions, etc.[4]

To take a broader perspective, and to further illustrate the role of metaconstructions in organizing the grammatical system, let us add to this the active vs. passive alternation. In Swedish, the regular way of forming a passive is adding the suffix *-s* to the main verb and marking its object argument as the grammatical subject:

(10) Swedish

    a. Boken   lästes.
       book-DEF read-PST-PASS
       'The book was read.'

    b. Lästes   boken?
       read-PST-PASS book-DEF
       'Was the book read?'

(11) Swedish

    a. Soppan   har ätits.
       soup-DEF have eat-PST-PASS
       'The soup has been eaten.'

    b. Har soppan ätits?
       Have soup-DEF eat-PST-PASS
       'Has the soup been eaten?'

Thus, the relationship between active and passive in Swedish may be characterized as the following metaconstruction[5]:

We may relate the metaconstructions shown in Figure 7 and Figure 8, and thereby present a limited subsystem of the Swedish grammar organized by these metaconstructions, in the following manner:

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[4]There are no a priori limits to what, and how much, information a metaconstruction may include, just as there are no such limits for the information content of a construction. Constructions, as usage-based generalizations of expressions, may include any amount of observed and generalized linguistic information. Similarly, metaconstructions may, at least in principle, include any amount of information relevant to the constructions that they relate to one another and the relationship between those constructions. In practice, however, the core of a metaconstruction is a relatively simple analogical relation, and the rest of the information included in it is a selection of features of the constructions involved. Even so, of course, metaconstructions tend to be rather complex knowledge structures.

[5]In Figure 8, the notion S_S stands for a grammatical subject which expresses the subject argument of the verb, S_O for a grammatical subject which expresses the object argument, etc.

$$[[S_S \; V \; O_O] \leftrightarrow [S_O \; V\text{-}s]]$$

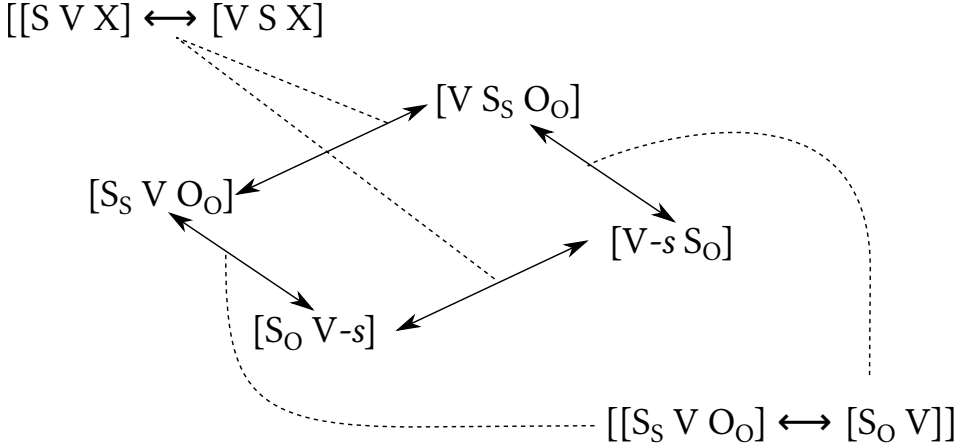Figure 8: Metaconstruction between active and passive sentences in Swedish

Figure 9: Assertive sentences, yes/no questions and active and passive voice as a subsystem in Swedish

In Figure 9, there are two instances of both of the metaconstructions shown in Figure 7 and Figure 8. The one shown in Figure 7, i.e. [[S V X] ↔ [V S X]], connects the sentence types [S_S V O_O] (i.e. active assertive sentence) and [V S_S O_O] (active yes/no question) on the one hand, and the sentence types [S_O V-*s*] (passive assertive sentence) and [V-*s* S_O] (passive yes/no question) on the other. Correspondingly, the metaconstruction shown in Figure 8, i.e. [[S_S V O_O] ↔ [S_O V-*s*]], connects the sentence types [S_S V O_O] (active assertive sentence) and [S_O V-*s*] (passive assertive sentence) on the one hand, and [V S_S O_O] (active yes/no question) and [V-*s* S_O] (passive yes/no question) on the other.

This example shows a notably different aspect of metaconstructions than that discussed in Section 2. While the example of Finnish subject and object case marking was a case of diachronic change taking place, and metaconstructions serving as a vehicle of such change, the case of the Swedish sentence types is purely synchronical. The synchronic role of metaconstructions may be argued to include such tasks as finding the right construction for a given discourse function, indicating correspondencies between different expression types, and the like. The synchronic and diachronic aspects of metaconstructions will be further discussed in Section 4 and Section 5. It should be noted, however, that metaconstructions do have both aspects to them: they serve both as synchronic devices

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which organize the grammar of a language and as diachronic analogy models for re-organizing the grammar.

3 Some related theoretical notions

The notion of metaconstruction is quite obviously related to other previously suggested notions. In the following, I shall point out some similarities between metaconstructions and Kay's *patterns of coining,* on the one hand, and Chomskyan transformations, on the other.

3.1 Metaconstructions and patterns of coining

The concept of metaconstruction, in particular in its use as a basis for novel expressions and expression types, shows great resemblace to Kay's *patterns of coining* Kay 2013.[6] Kay's first example is the word *underwhelm,* which is the result of analogy along the following lines:

(12)   a.   English
             Kay (2013: 33)
             over : overwhelm :: under : **underwhelm**

Above, I have not extended the concept of metaconstruction to morphological phenomena, simply because Construction Grammar does not yet have conventionalized ways of representing morphology and morphological phenomena. However, we may rather comprehensibly—albeit pre-theoretically—represent (12) in terms of metaconstructions as follows:

$$[[P] \leftrightarrow [P\,whelm]]$$

Figure 10: A metaconstructional accoount of underwhelm

What the metaconstruction in Figure 10 states is essentially that there is a relationship between the combination of a preposition and another word which consists of that preposition and the affix (or affix-like element) *-whelm.* The pair of words related to one another by this metaconstruction share semantic features in a systematic way. In other words, for the two pairs of words, *over & overwhelm*

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[6]Kay, in fact, attributes the notion to Charles Fillmore. Apparently, Fillmore has presented the notion in a lecture, the text of which is available online (Fillmore 1997). However, since Fillmore does not elaborate on the notion, whereas Kay does, it seems justified to refer to the notion as *Kay's* patterns of coining.

and *under & underwhelm,* the metaconstruction essentially expresses the same information as Kay's proportional analogy shown in example (12).

The metaconstruction in Figure 10 obviously allows for such hypothetical words as *upwhelm, downwhelm, throughwhelm, inwhelm, outwhelm* etc. This could be used as an argument against this formulation, claiming that the metaconstruction in 10 *overgenerates* such expression. However, as I shall discuss below, metaconstructions are not intended as generative entities. Rather, they express observed analogies. Thus, the metaconstruction in 10 does not state that we should expect such words as *upwhelm* and *inwhelm.* What it does state is that if we were to encounter such words, then *upwhelm* would be to *overwhelm* what *up* is to *over;* i.e. that the relation between *upwhelm* and *overwhelm* is analogous to that between *up* and *over.*

The same goes, mutatis mutandis, for other patterns of coining discussed by Kay as well. While metaconstructions merely capture similarities between observed expressions and, notably, *types* of expressions, patterns of coining are used (as the name implies) to coin new expressions. In other words, patterns of coining are *productive* to some extent, whereas metaconstructions are not (except for some rare cases such as the one discussed in Section 2.1).

This point leads us to an interesting continuum from metaconstructions via patterns of coining to constructions. According to Kay (2013: 38), the formula *A as NP* 'extremely A' is not a construction but, rather, a pattern of coining. He states two reasons for this (ibid.):

> First, knowledge of formula (12) [A as NP 'extremely A'] plus knowledge of the constituent words is not sufficient [to license examples of this formula]. If a young, foreign or sheltered speaker of English knew what *easy* meant, and knew what *pie. duck,* and *soup* meant and knew all the expressions in [Kay's examples] plus many more built on the same pattern, they would still not know that *easy as pie* and *easy as a duck soup* are ways of saying *very easy.* Secondly, one can't freely use the pattern to coin new expressions.

The central point of Kay's argument—and, indeed, his whole paper—is that patterns of coining are less productive than grammatical constructions. As noted above, metaconstructions are less productive than patterns of coining. Thus, we may think of these three as a cline from less to more productive generalizations:

While this is by no means the only difference between these three theoretical notions (notably, metaconstructions are generalizations of expression *types,* or more accurately of relations which hold between them, while the other two are

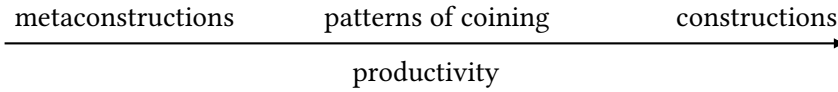| metaconstructions	patterns of coining	constructions

productivity

Figure 11: Constructions, patterns of coining, and metaconstructions on a productivity scale

generalizations of actual expressions), this aspect of the notions is useful in pinning down the essential nature of each of these notions. And, as we saw in the case of *underwhelm,* metaconstructions can actually be postulated as generalizations of actual words and utterances as well.

3.2 Metaconstructions and transformations

A rather different way to conceive of the notion of metaconstruction has to do with a somewhat different branch of linguistics. As the observant reader may well have noticed, such metaconstructions resemble, to a great degree, the *grammatical transformations* used in the tradition started by Chomsky (1957). And indeed: such a tool might well be used to revitalize the transformational school of thought. For example, Chomsky (1957: 43)'s example:

> If S1 is a grammatical sentence of the form
> *NP1 − Aux − V − NP2,*
> then the corresponding string of the form
> *NP2 − Aux + be + en − V − by + NP1*
> is also a grammatical sentence

can be expressed, with a notation which greatly resembles the characterizations of metaconstructions, in the following form:

$$[[NP1 − Aux − V − NP2] \leftrightarrow [NP2 − Aux + be + en − V − by + NP1]]$$

However, this is by no means what metaconstructions are intended to do. The nature of metaconstructions is deeply different from that of transformations. Although the differences between metaconstructions and transformations may not appear to be as obvious as the similarities, they are all the more noteworthy from a theoretical perspective.

First of all, it is clear that metaconstructions are not nearly as productive as transformations. Metaconstructions are generalizations which a language user

may or may not make, and their central function is to keep up analogical relationships among different sets of constructions.

Secondly, metaconstructions are not used to turn linguistic material into some other linguistic material, or deep structure into surface structure, the way that transformations are: metaconstructions are not generative in nature. Where transformations may be said to describe alternations, metaconstructions describe correspondencies. In the construction grammar world view, no material *changes* into other material; rather, everything is described in terms of correspondencies and compatibility.[7] In accordance with this tradition, metaconstructions do not involve transforming an expression into some more suitable expression.

And thirdly, metaconstructions have, as we saw above, a more or less diachronic nature. They are generalizations over *types* of expressions, not over actual expressions. If they do have a generative nature, that nature must be diachronic in the sense that metaconstructions are used to create new types of expressions, new constructions, rather than just new expressions.

The synchronic vs. diachronic nature of new constructions being conventionalized, and the role of metaconstructions in that, naturally is a broad topic and falls outside of the scope of this paper. As a general rule, however, I see the conventionalization of new constructions as a diachronic process (cf. e.g. Rostila 2006), and certainly more so than the process of generating utterances based on already existing constructions.

4 Metaconstructions and paradigms

The examples in Section 2 show that metaconstructions capture both static and dynamic relations between groups of constructions: they both show systematic groups of constructions within the grammar and may even serve as patterns for coining new constructions. Crucially with regard to the theme of the present volume, they may also be used to capture paradigmatic relations, unlike any other device yet postulated for Construction Grammar that I am aware of. In what follows, I present an analysis of the person inflection paradigm in Finnish as exemplified in different contexts, or groups of constructions.

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[7]Cf. Kay (1995) and the *non-derivational* and *usage-based* properties of Construction Grammar. While metaconstructions may sometimes be used to coin new expressions or expression types, as shown in Section 2.1, they are not part of the standard mechanism of generating sentences in the same manner as transformations are (or were) in transformational grammar.

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4.1 Finnish personal pronouns and the verb inflection paradigm

The Finnish person paradigm rather straightforwardly consists of the set of 1st, 2nd, and 3rd person in singular vs. plural. This paradigm is found both in verb inflection and in personal pronouns:

Table 1: Finnish person paradigm

		singular		plural
1.	minä	tee-n	me	tee-mme
	I	do-1SG	we	do-1PL
2.	sinä	tee-t	te	tee-tte
	you.sg	do-2SG	you.pl	do-2PL
3.	hän	teke-e	he	teke-vät
	(s)he	do-3SG	they	do-3PL
Passive			teh-dä-än	
			do-PASS-4	

A local peculiarity of Finnish, so to speak, is the form conventionally known as the passive, perhaps more accurately an impersonal form. It is sometimes referred to as "the 4th person" (originally by Tuomikoski 1971) to reflect the fact that it is effectively a part of the person inflection paradigm, despite the fact that it is used, to some extent, in constructions distinct from the ones used for the active forms. It does, however, resemble the active forms in usage significantly more than e.g. most Indo-European passives. For instance, it can be formed of practically all Finnish verbs, including intransitive verbs and even the copula.

While the passive morphologically has, in addition to the voice marker, a person suffix of its own, there is no separate personal pronoun for the passive. This is naturally in accordance with its primary use for agent demotion or impersonalization. Therefore, it might be argued that the passive is not a full-fledged "4th person" but rather a set of constructions which are used in contexts where the person inflection paradigm is not relevant. As will become apparent in the following sections, personal pronouns are not the only context to speak in favor of such a view. On the other hand, as will also become apparent, the finite verb inflection paradigm is by no means the only context to speak in favor of the opposing view, i.e. of interpreting the passive as a part of the person inflection paradigm.

The precise nature of the Finnish passive need not concern us here. The interested reader is referred to sources like Shore (1988), Manninen & Nelson (2004)

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and Helasvuo (2006) for further details. For the purposes of this paper, the crucial thing is that the passive is a conventional part of the person paradigm but not present in all of its manifestations.

4.2 Possessive suffixes

Possessive relations in Finnish are typically marked, redundantly, with two devices simultaneously: the genitive form of a personal pronoun on the one hand, and a possessive suffix on the other.

Table 2: Finnish possessive paradigm

	singular		**plural**	
1.	minu-*n*	puhee-*ni*	meidä-*n*	puhee-*mme*
	I-GEN	speech-NOM-1SG	we-GEN	speech-NOM-1PL
2.	sinu-*n*	puhee-*si*	teidä-*n*	puhee-*nne*
	you.sg-GEN	speech-NOM	you.pl	speech-NOM-2PL
3.	häne-*n*	puhee-*nsa*	heidä-*n*	puhee-*nsa*
	(s)he-GEN	speech-NOM-3SG/PL	they	speech-NOM-3SG/PL
Passive		puhe		
		speech-NOM		

As shown above, the passive is left out of the paradigm again: not only has it no personal pronoun of its own, but it also has no corresponding possessive suffix. What exactly a "passive ownership" would mean is left an open question here. For the sake of the argument, we may assume that a bare noun with no possessive marker is the closest match to "impersonal ownership". As will become apparent, however, there are other contexts in which the possessive suffixes are used where a passive possessive suffix would be useful to complete the paradigm. As is also shown above, the possessive suffix paradigm does not distinguish between 3rd person singular and plural. While this is an interesting observation per se, it need not concern us here.

It seems perfectly natural that the same distinctions between 1st, 2nd, and 3rd person and singular vs. plural are found both in verb inflection and in nominal possessive marking. It seems equally natural that the same personal pronouns

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occur with verbs inflected for person and nouns marked for possession. And yet, there is no a priori reason why this should be the case, and, more importantly for present purposes, there is nothing in the architecture of Construction Grammar that could capture, let alone explain, the fact that it is the case.

While there has, so far, been no notable attempt at capturing Finnish morphology in a construction-based formalism, it is obviously possible to represent the morphological structures as constructions, e.g. with the formalism proposed in Booij (2010). Such a formalization is beyond the scope of this paper, but for the present case the crucial point is that the paradigms shown above can be represented as organized groups of constructions. Furthermore, it is important to observe that the organization of the group of constructions discussed in this section (possessive suffixes) is essentially identical to the organization of the groups of constructions discussed in the previous section (personal pronouns and verb inflection).

Given the discussion in Section 2 of this paper, it seems justified to claim that it is possible to capture the systematic, and in fact analogous, organization of these groups of constructions in terms of a (somewhat complex) metaconstruction. And, as will become apparent in following sections, the same metaconstruction is also necessary for capturing and explaining other phenomena in the Finnish grammar.

4.3 The Finnish infinitive system

In Finnish, as in languages more generally, person inflection is essentially a property of finite verb forms. However, as will be shown in the following sections, Finnish infinitives also show features at least reminiscent of person inflection in some contexts. In order to properly understand that phenomenon, a brief introduction of the complex of Finnish infinitive forms is in place.

According to the traditional view, predominant since the 19th Century, Finnish is said, on morphological grounds, to have either four or five distinct infinitives, each of which has a different morphological marker. Each of the infinitives shows some case inflection, but none of them has a full case inflection paradigm. The forms are traditionally referred to with numbers, but since Hakulinen et al. (2004), they are more commonly referred to by their morphological marker. Hakulinen et al. only treat the first three as true infinitives for reasons that need not concern us here. The forms are briefly introduced in the following.

(13) **1st infinitive (Hakulinen et al. 2004: A infinitive):**

- morphological marker *-TA*[8] (i.e. *-a, -tä, -da, -dä,* and assimilated variants *-lA, -rA*, etc.)

- "short form" (nominative/accusative): *teh-dä* (do-INF1)

- translative: *teh-dä-kse-en* (do-INF1-TRA-3SG/PL)

2nd infinitive (E infinitive):

- morphological marker *-den, -ten*

- inessive: teh-de-ssä (do-INF2-INE)

- instructive: teh-de-n (do-INF2-INS)

3rd infinitive (MA infinitive):

- morphological marker *-mA* (-ma, -mä)

- inessive: *teke-mä-ssä* (do-INF3-INE)

- elative: *teke-mä-stä* (do-INF3-ELA)

- illative: *teke-mä-än* (do-INF3-ILL)

- adessive: *teke-mä-llä* (do-INF3-ADE)

- instructive: *teke-mä-n* (do-INF3-INS)

- abessive: *teke-mä-ttä* (do-INF3-ABE)

4th infinitive:

- morphological marker *-minen, -mis-*

- nominative: *teke-minen* (do-INF4)

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[8]The vowel quality in Finnish affixes is dependent on vowel harmony. In front vowel contexts, the archephoneme /A/ is realized as the frontal vowel *ä* [a], and in back vowel contexts as the back vowel [ɑ]. Similarly, the archephoneme /O/ is realized either as the front vowel ö [ø] or the back vowel o [o] depending on the phonemic context. To further confuse the uninitiated reader, the verb stem varies according to consonant gradation (which also differentiates between the realization of the /T/ of the infinitive marker as either [t] or [d]) and other sound changes triggered by the following affix. Fortunately, for the purposes of this paper, these peculiarities are beside the point.

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- partitive: *teke-mis-tä* (do-ɪɴꜰ4-ᴘᴀʀ)

5ᵗʰ infinitive:

- morphological marker –-maisi-, -mäisi-

- adessive: *tekemäisillään* (do-ɪɴꜰ5-ᴀᴅᴇ-3sɢ/ᴘʟ)

In other words, according to the traditional view, Finnish has several separate infinitives, each of which has a defective case inflection paradigm. A radically different view, originally presented already by Lönnrot (n.d.: 44) and rediscovered by Siro (1964), treats the different forms as variants of the same infinitive, with the infinitive marker varying in different case forms. As Siro points out, the different infinitive markers are in fact nearly in a complementary distribution with regard to case inflection:

Table 3: Finnish infinitive forms sorted by morphological case

Nominative (or basic form)	*sano*	*-a*		1.
	sano	*-minen*		4.
Partitive	*sano*	*-mis*	*-ta*	4.
Translative	*sano*	*-a*	*-kseni*	1.
Inessive	*sano*	*-e*	*-ssa*	2.
	sano	*-ma*	*-ssa*	3.
Elative	*sano*	*-ma*	*-sta*	3.
Illative	*sano*	*-ma*	*-an*	3.
Adessive	*sano*	*-ma*	*-lla*	3.
	sano	*-maisi*	*-llani*	5.
Abessive	*sano*	*-ma*	*-tta*	3.
Instructive	*sano*	*-e*	*-n*	2.
	sano	*-ma*	*-n*	3.

To complete the complementary distribution, each of the forms is only used in a limited set of non-finite expression types, or constructions, and those few instances where there are two different infinitive forms corresponding to the same case form (nominative, inessive, adessive, and instructive), the two forms are never mutually interchangeable in any of the constructions in which they are used.

4.4 Finnish infinitives with possessive suffixes

Infinitives are often described as verb forms which resemble nouns. This characterization typically refers to their syntactic behavior, but in Finnish it is true also of their morphology. As was shown in Section 4.3, Finnish infinitives are inflected for case like nouns. In addition, some of them also take the possessive suffix in some contexts—the translative form of the 1st infinitive and the adessive form of the 5th infinitive in fact never occur without a possessive suffix.

Not all Finnish infinitive forms occur with possessive suffixes however. Of the 13 different infinitive forms (combinations of an infinitive marker and a case ending) listed in Table 3, only five occur with possessive suffixes:

Table 4: Finnish infinitive forms with possessive suffixes

Infinitive	Case	Form
1.	nominative/accusative	
	translative	*lähte-ä-**ni*** (leave-INF1-SG) 'me to leave' (not in contemporary standard language)
2.	inessive	*teh-de-ssä-**mme*** (do-INF2-INE-1PL) 'while we do'
	instructive	*kuul-te-**nsa*** (hear-INF2-INS-3SG/PL) 'with him/her overhearing'
3.	instructive	*piti teke-mä-**ni*** (must-PST-3SG-do-INF3-INS-1SG) 'I had to do' (only used with the necessive modal verb *pitää*, not in contemporary standard language)
4.	adessive	*olin tekemäisillä**ni*** (be-PST-1SG do-INF5-ADE-1SG) 'I was just about to do' (always with a possessive suffix)

In all of the occurrences of these forms, the possessive suffix corresponds to the actor of the event denoted by the infinitive. In other words, for all intents and purposes, the possessive suffix in these forms semantically corresponds to person inflection. Yet, the morphemes used for that purpose in the infinitives are not those used as person affixes in finite verb forms but rather those used for marking possession with nouns as shown in Section 4.2.

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4.5 Passive infinitive forms

As was pointed out in Section 4.1, the Finnish passive is effectively a part of the person inflection paradigm. Given that, and the observation made in Section 4.4 that possessive suffixes in infinitives resemble person inflection, the question arises whether there are passive forms to complete the person paradigm in those infinitive forms which do take the possessive suffix. And, indeed, there are passive infinitive forms in Finnish, even though they are few in terms of both types and tokens. In fact, there are only three passive infinitive forms in Finnish.

Table 5: Finnish passive infinitive forms

Infinitive	Case	Form
1.	nominative/accusative	*teh-tä-ä* (do-PASS-INF1) 'to be done' (not in contemporary standard language)
2.	inessive	*teh-tä-e-ssä* (do-PASS-INF2-INE) 'while being done'
3.	instructive	*piti teh-tä-mä-n* (must-PST-3SG do-PASS-INF3-INS) 'had to be done' (only used with the necessive modal verb pitää, not in contemporary standard language)

As has been pointed out by J. Leino (2005b), the following observation holds in the Finnish infinitive system: if a given infinitive (i.e. a combination of one of the four or five infinitive markers and a specific case suffix) has a passive variant, then it also has a variant with a possessive suffix. In other words, there are no passive infinitive forms with no corresponding possessive suffixed forms. This seems to suggest that the few existing passive infinitive forms are motivated by the forms with the possessive suffixes, and have arisen in order to complete what looks like their person inflection paradigm.

4.6 Emerging non-finite person inflection?

As an interim summary, Finnish shows the same paradigm of 1st, 2nd, and 3rd person in singular vs. plural in a number of different contexts, including personal pronouns, finite verb inflection, possession marking on nouns, and the usage of possessive suffixes on infinitives, closely resembling person inflection. Furthermore, the paradigm is in several, but not all, of its instances supplemented by

the passive. Thus, what we observe is a paradigm consisting of seven parts, organized in terms of voice, person, and number.

It seems rather obvious that some of the instances of this pattern, or paradigm, are more fundamental than others. Notably, the apparent person inflection of infinitives seems secondary in comparison to both its clear model, finite verb inflection, and the much more common use of the possessive suffixes as markers of possession. This impression is backed up by the fact that other Baltic Finnic languages make even less, if any, use of passive and possessive suffixed infinitives than Finnish does, suggesting that they are the result of a relatively late development.

While the apparently emerging non-finite person inflection is a relatively young development, and one that has not been fully developed (at least yet), it is strongly motivated by related phenomena in the Finnish language. Notably, of course, person marking on finite verbs serves as the single most important semantic model. Possessive marking, on the other hand, provides suitable morphological means to realize the marking, in the form of affixes that naturally attach to noun-like forms such as infinitives.[9]

To illustrate the similarieties, consider the following:

(14) Finnish

    a. minä   tee-n
        I-NOM do-1SG
        'I do'

    b. minu-n teh-de-ssä-ni
        I-GEN   do-INF2-INE-1SG
        'while I do'

    c. minu-n auto-ssa-ni
        I-GEN   car-INE-1SG
        'in my car'

The resemblance of the possessive suffixed infinitival expression in (14b) to the finite verb expression in (14a), on the one hand, and the NP with possessive marking and the same case inflection in (14c), on the other, is clear.

More importantly with regard to the topic of the present paper, however, all of the expressions in (14a) may be altered to represent the 1st, 2nd, and 3rd person in

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[9]A further motivation is the genitive subject which occurs in many non-finite constructions in Finnish and which motivates the use of the possessive suffix. For the sake of simplicity, I will omit this part of the complex here. For details, see J. Leino (2015).

singular vs. plural, and both of the verbal expression, i.e. (14a) and (14b), may also take the passive morphology. Even (14c) may be claimed to have a counterpart for the passive in the form of a simple noun with no possessive marking. Thus, the correspondence of these expression types is systematic with regard to the person paradigm.

The following figure shows the set of phenomena described above, with their interconnections, and the person paradigm which is present in all of them.
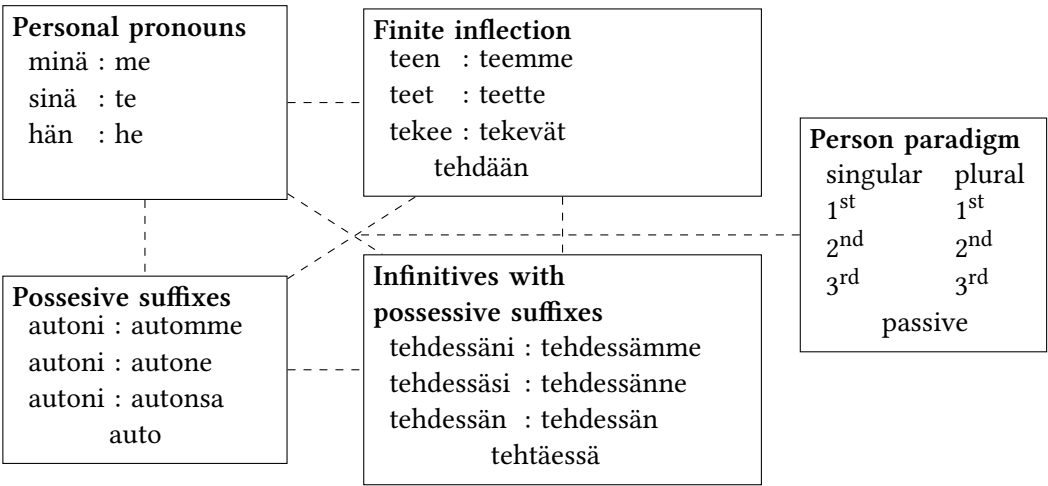

Figure 12: Motivational structure of the possibly emerging non-finite person inflection

Unfortunately, a proper formalization of the various (sets of) constructions and interconnections shown in Figure 12 is beyond the scope of this paper—not least because it would not be possible without a lot of basic groundwork for describing Finnish morphology in a constructionist framework. Importantly, however, it is possible to represent all the relevant expression types as constructions and to formalize their analogical interconnections in the form of metaconstructions, in the spirit of the analyses and formalizations in Section 2 of this paper.

Understanding the complex in Figure 12 as an analogically interconnected group of constructions is revelatory to the nature of paradigms. It serves as an example of what was already observed in Section 2: that language promotes systematicity and recurring patterns by extending observed analogical relations to other contexts, in other words by "copying" ways to organize grammatical information from one part of the grammar to others. This naturally leads to paradigms which hold to more than one single set of constructions.

5 Implications and conclusions

Based on the phenomena discussed above, and the observations made, we may conclude that analogy plays a central role in the internal organization of grammar. In order to capture analogical relations within grammar, a concept like metaconstruction, or at least something similar capable of capturing those relations, is necessary. Acknowledging, and also formalizing, systematic analogical relations between sets of constructions lets us see paradigms as emergent categories of grammar, based on generalizations over repeatedly observed analogies. Paradigms often involve very complex sets of relations between constructions, but they may nonetheless be described in terms of systematic interconnectedness of rather simple constructions. This becomes particularly clear in a case like the one described in Section 4 where a new instantiation of a paradigm is emerging.

I hope to have shown that metaconstructions have a role in both the synchronic organization and the diachronic reorganization of grammatical constructions. They participate both in statically structuring the inventory of constructions in a given language and in dynamically restructuring that inventory. This restructuring may occur by reanalysis of existing constructions and relationships between them or by coining new constructions through analogy based on existing ones.

Metaconstructions are *generalizations* of constructions, and their central function is to keep up analogical relationships among different sets of constructions. Thus, metaconstructions have to do with networking certain structures and meanings into a coherent system, and with choosing a construction that fits into a given communication setting. This has to do with the topic of synchronic organization of constructions.

Metaconstructions also have, as we have seen, a diachronic nature. They are generalizations of *types* of expressions, not of actual expressions. If they are to be seen as *generative* parts of the grammar, then they must be generative only in the sense that they are not used to create new expressions but, rather, new *types* of expressions, new *constructions*. Consequently, they also have a major role in the diachronic re-organization of constructions.

Furthermore, metaconstructions are a formalization of a phenomenon which is of great importance with regard to language acquisition. Metaconstructions may, in a number of cases, be thought of as *proto*constructions: they are observed analogies, and when they reach a sufficient level of generality, the language learner may use them to abstract a new construction. In other words, we may assume that a child observes an analogical relation between two linguistic expressions and the situations that they represent, and abstracts a construction

based on these expressions which is associated to an abstraction of these situations.[10] Similarly, a language learner may observe a similarity of an analogical nature among a group constructions, and abstract a more general construction.

Goldberg (1995: 75) states that inheritance links are "objects in our system": they are an essential part of the language and the grammar, to the extent that a grammar consists not only of constructions but also of different kinds of links which express different kinds of relations between those constructions. As I have argued in this paper, grammar also includes metaconstructions, which further structure and organize the inventory of constructions and which also express relations between constructions—albeit more complicated ones than those expressed with inheritance links—and also provide a dynamic, re-organizational aspect to the grammatical system.

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[10]For a more detailed account of language acquisition based on this type of reasoning, see Kauppinen (1998, 1999).

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Chapter 4

No paradigms without classification: How stem-derivation develops into grammatical aspect

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The Slavic aspect (pfv.:ipfv.) system is based on a binary opposition of stems connected by derivational patterns. The choice between pfv. and ipfv. stem is unavoidable, since it affects virtually any finite and non-finite form. Simultaneously, this opposition is characterized by classificatory properties resulting from complementary inventories of heterogeneous functions and constraints assigned to pfv. and ipfv. stems, respectively. This situation raises questions as for the paradigmatic organization of lexical units represented by verb stems, and an argument is developed for a two-layer structure of paradigms which integrates the crucial role played by complementary inventories of functions and constraints associated to ipfv. vs pfv. stems. Concomitantly, a case is made for a moderate paradigm-based model of morphology in which stems are the basic units. On this background also Construction Grammar approaches toward grammatical categories are evaluated and useful parallels to Word-and-Paradigm models are elaborated on in order to show which hitherto unnoticed profit can be gained for a theory of grammatical oppositions by a due account of the properties of the Slavic aspect system.

1 Introduction

The opposition of perfective (pfv.) : imperfective (ipfv.) aspect is kind of "proprietary label" of Slavic languages as a whole. The fundamental architecture of this system is the same for all varieties of Slavic, both concerning the morphological patterns and the basic functional distinctions (see Section 2). The pfv.:ipfv.

opposition is binary, and the backbone of the system builds on regular and predictable patterns of stem-derivation (Section 2.1). Consequently, every finite and non-finite form of a verb belongs to either pfv. or ipfv. aspect. This makes aspect choice almost unavoidable, and since verbs play a central role in syntax and participate in many categorial distinctions, aspect choice bears severe consequences for the grammatical system of any Slavic language. Simultaneously, the distribution of pfv. and ipfv. stems over contexts that can be defined by grammatical or pragmatic conditions raises questions about the lexical units on which aspect operates, and about the paradigmatic organization of verb stems representing such units (Section 2.2). This is why the history of Slavic aspectology abounds in discussions concerning the morphological status of the pfv.:ipfv. opposition and its interaction with the lexicon. Central to this discussion are countless debates as for which ipfv. and pfv. stems represent the same lexical meaning (so that they can be considered pairs, partners or groups) and how these relations should be captured in systematic lexicography, but also how the paradigmatic structure of morphologically related verb stems of opposite aspect may be captured (see Section 2).

These traditional debates, in particular the issue of paradigmatic organization, are here re-evaluated: by choosing a stem, one chooses aspect, and this choice correlates with various grammatical constraints and functional oppositions, largely depending on different types of construction. The choice therefore depends on sets of functions and constraints, and these sets tend toward complementary distribution over two classes of stems, called perfective and imperfective. Aspectual distinctions belong among the core functions influencing this choice, but many more oppositions and constraints have appeared since the onset of a development by which diverse kinds of contextual implicatures have been strengthened and entrenched via the choice of stems. These stems organize into two classes (class of pfv. stems vs class of ipfv. stems) and thus make up a binary classificatory system.

Plungjan (2000: 125) defines classificatory categories as follows:

> [1] (…) a given amount of lexemes of a language distributes over non-overlapping subclasses without any remainder; every subclass is characterized by its meaning for a certain grammatical category. Therefore, this category is assigned not to word forms, but to lexemes and determines the grammatical *classification* of the [given section of the] lexicon. This is why it is called classificatory. Plungjan (2011: my translation, emphasis original; see also53f.)

Plungjan considers Slavic aspect a prominent example of a classificatory category. In accepting this, I further argue that the units underlying grammatical

classification are stems and that, first of all, the grammatical classes (inventories of pfv. stems vs ipfv. stems) are themselves established and strengthened by an increasing amount of very heterogeneous functions and constraints in complementary distribution. Thus, complementary inventories and the binary opposition of two increasingly abstract classes condition each other mutually (see Section 2.2).

From these premises, we arrive at two interrelated claims which will be argued for in this article, namely

[Claim 1] The tight organization of complex paradigmatic oppositions conditioned by aspect choice in Slavic (the pfv.:ipfv. opposition), though based on stem-derivation, can only be explained from the classificatory properties of the system; these properties, in turn, themselves result from the formation of complementary sets of functional (grammatical and pragmatic) oppositions and constraints.

[Claim 2] The complementary sets participate in the formation of a complex paradigmatic system, "on top" of traditional sets of finite and non-finite verb forms; the nature and provenance of this paradigmatic organization considerably modifies known conceptions of paradigms.

Concomitantly, these properties explain why the rise of the Slavic aspect opposition is no good example of grammaticalization. Among standard parameters, as those in Lehmann (1995); Heine & Kuteva (2002); Himmelmann (2004), only paradigmatic tightening and, to a much smaller extent, syntagmatic tightening apply, in a sense we may add also context expansion, but other parameters are practically irrelevant, or useless (Wiemer 2002: 6, Wiemer 2008, Wiemer 2020b: 267-270, Wiemer & Seržant 2017). This said, we have to specify in which sense paradigmatic and syntagmatic tightening as well as context expansion apply and why the rise of tighter paradigmatic relations is crucial for an understanding of this grammatical opposition. The question whether the related processes and their results may be subsumed under grammaticalization is tangential to (and unrevealing for) a proper explanation of how this opposition works and how its paradigmatic organization looks like. More so, I dare claim that neither Construction Grammar nor Word-and-Paradigm approaches, as known so far, are able to provide a fully adequate description (let alone explanation), although it is certainly among these approaches where we have to look for an adequate model.

This sets the stage for the following. I will start with essentials about the Slavic pfv.:ipfv. opposition; this presentation glosses over lots of details, is far from comprehensive and refrains from diachronic background. It is reduced to those basics

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which are necessary to justify why aspect in contemporary Slavic should be considered a classificatory system based on stem derivation (Section 2), and which are indispensible for a proper understanding of the problematic relation between paradigm and lexeme, which will be addressed in Section 3 Subsequently, I will discuss the merits and limits of Construction Grammar approaches and Word-and-Paradigm models for an account of the architecture of aspect in Slavic (Section 4), before I come to my own proposal of an extended notion of paradigm applied to aspect choice (Section 5). The article ends with a summary and an outlook (Section 6).

Two "technical" remarks should be added: if no elaborate glossing is needed, I will indicate the aspect of the stem by upper case small caps (IPFV, PFV), and examples given without an indication of their source are constructed.

2 The basic architecture of the Slavic pfv.:ipfv. opposition

Essentially, the pfv.:ipfv. opposition of Slavic languages rests on two pillars, one consists in patterns of morphological derivation (Section 2.1), the other in the distribution of verb stems over (a) function inventories and (b) sets of combinatorial restrictions (Section 2.2). Both pillars jointly provide the foundation for paradigmatic oppositions and render them grammatical, but while the first pillar assigns some regularity of form to this opposition, it is the distributional properties of the involved stems which turn it into a classificatory category. These two characteristics – patterns of stem derivation and grammatical classification – are not only compatible with each other, by capturing different properties of Slavic aspect (Wiemer 2006), but they depend on one another; moreover, they justify why different models of morphological analysis should be combined. Among these, Word-and-Paradigm approaches are more important.

2.1 Stem-derivational patterns

In Slavic, aspect is not indicated by unequivocal, monofunctional morphemes. Instead, the morphology of aspect builds on the functional reinterpretation of patterns of stem derivation which uses both prefixes and suffixes (Breu 2000; Wiemer 2008; Wiemer & Seržant 2017, among many others). Apart from minor, often lexically restricted and obsolete patterns, two patterns predominate and are productive across contemporary Slavic; see (1)-(2) with infinitives:

(1) Predominant patterns of stem derivation and their grammatical reinterpretation

  a. simplex ⇒ PREFIX+simplex

  b.   prefixed stem ⇒ [prefixed stem]+SUFFIX

  ⇓ reinterpretation: (a) identical lexical concept

  (b) different grammatical distribution

(2) a. simplex$^{\text{IPFV}}$ − prefixed stem$^{\text{PFV}}$ (e.g., Pol. *gotowa-ć* ⇒ ***u****-gotowa-ć*
     'cook')

  b. prefixed stem$^{\text{PFV}}$ − [[prefixed stem]+SUFFIX]$^{\text{IPFV}}$
     (e.g., Pol. *prze-kaza-ć* ⇒ *prze-kaz-****ywa****-ć* 'convey';
     s-praw-i-ć ⇒ *s-prawi-****a****-ć* 'cause')

Importantly, markers of tense, mood, agreement (person/number) and of non-finite forms all occur outside of these stems. Although such ending sets are associated with systematic morphonological alternations, e.g., between present (resp. non-past) and infinitive stems, these alternations apply to any stem regardless of its aspect. This predictably leads to multiple exponence, e.g. the non-past and the infinitive stem each imply particular sets of endings (see 3a-3b), so do allomorphs of imperfectivizing suffixes, like -*ywa*- vs -*uj*- in Polish (see 4b-4c). Thus, the patterns of stem changes that distinguish aspect are entirely dissociated from alternations between non-past and infinitive stems, i.e. from what Brown (1998: 199) dubs 'allostems'. These two types of stem change are not related diachronically, and despite regular morphonological alternations at the end of stems (or: before endings), the word-form structure shows clear morpheme boundaries;[1] in this respect, it follows concatenative principles: typical portmanteau morphemes are characteristic of material added on stems, not of stems themselves. See (3)-(4), where square brackets indicate the part of the word forms which constitutes the stem relevant for determining aspect. They show the Word form structure and non-aspect related stem-alternations in Polish.

(3) [1] Simplex imperfective stem ⇒ perfective stem by prefixation

  a. [*pis-a*]$^{\text{IPFV}}$-*ł-a*   ⇒ [*na-pis-a*]$^{\text{PFV}}$-*ł-a*
     write-THV-PST-SG.F   PFX-write-THV-PST-SG.F

     'she wrote, was writing' 'she wrote (up)'

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[1]There also occur language-specific regular changes in the root vowel (apophony), e.g. Pol. *przepow****ie****dzieć*$^{\text{PFV}}$ – *przepow****iada****ć*$^{\text{IPFV}}$ 'forecast.INF', but these non-concatenative alternations are likewise irrelevant for aspect membership. They can supply additional cues for its recognition, but never independently from the patterns given in (1)-(2), and from multiple prefixation if it applies (see below).

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> b. [*pisz*] ^{IPFV}-*ę*   ⇒   [*na-pisz*]^{PFV}-*ę*   (< **(na-)pis-jǫ*)
>   write.PRS-PRS.1SG   PFX-write.PRS-PRS.1SG
>   'I write, am writing' 'I will write (up)'

(4)   [2] Perfective stem by prefixation ⇒ secondary imperfective stem by suffixation

> a. [*roz-wiąz-a*]^{PFV}-*l-i*   ,   [*roz-wiąz-a*]^{PFV}-*ć*
>   PFX-bind-THV-PST.VIR-PL.VIR   PFX-bind-THV-INF
>   'they tied off' 'tie off'

> b. ⇒   [*roz-wiąz-ywa*] ^{IPFV}-*l-i*   ,   [*roz-wiąz-ywa*]^{IPFV}-*ć*
>   PFX-bind-SFX-PST.VIR-PL.VIR   PFX-bind-SFX-INF
>   'they tied off, were tying off' 'tie off'

> c. [*roz-wiąz-uj*] ^{IPFV}-*ą*
>   PFX-bind-SFX-PRS.3PL
>   'they tie, are tying off'

This standard segmentation of word forms into morphemes, with an account of allomorphy, looks like an application of an Item-and-Process (IP) analysis, inasmuch as morphonological changes are accounted for, or even an Item-and-Arrangement (IA) analysis, inasmuch as we merely consider concatenative principles. However, such analyses miss the crucial point that these allomorphic alternations are accidental, thus irrelevant, for determining the membership of the stem to pfv. or ipfv. aspect. It is not affixes themselves which determine aspect, but patterns yielding an opposition to another stem which is formally distinguished by presence vs lack of a prefix or suffix.[2] Since these stem distinctions apply "before" markers of tense and agreement are added, each stem already distinguished as pfv. or ipfv. can have all kinds of finite and non-finite forms, or conversely: aspect is in principle distinguished for all finite and non-finite forms (infinitive, participles, action noun); cf. also Andersen (this volume).

As the patterns in Figures 1-2 show, the locus of the affix is also crucial: most simplex stems are ipfv., while prefixation almost always yields a pfv. stem, and the addition (or change) of another suffix makes an already prefixed stem ipfv. While the latter, i.e. so-called secondary imperfectivization, almost never changes the lexical meaning of the stem, prefixes normally change it. In those cases, the

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[2]Here I am neglecting differences between addition and change (or alternation) of suffixes, for reasons that become clear in Section 2.2 and Section 3

prefix serves both a lexical function (it changes lexical meaning and thereby partakes in creating a new lexical unit) and a grammatical function (it changes an ipfv. stem into a pfv. one).

In contrast to prefixes, the number of suffixes used in secondary imperfectivization (see 4b) is much smaller, in fact contemporary Slavic languages tend to have only one productive suffix, such as Russ./Pol./Cr. {iva}, Czech {ova}, Bulg./Bel. {va}. It has as such become a salient sign of imperfectivization which, above all, does not change lexical meaning. For this reason, many have regarded it as a grammatical marker of ipfv. aspect par excellence. Moreover, because of its productivity secondary imperfectivization has also been viewed as inflection, while other patterns of stem derivation would be ascribed a different grammatical status – with the consequence, that Russian aspect has sometimes been treated as a morphologically mixed category. Without going too deeply into this recently revived debate (cf. Gorbova 2015), I here only want to point out that nothing in the morphological structure of verb stems forces us to assume that the addition or alternation of suffixes which precede morphemes marking agreement categories (person/number) or tense should be considered as inflection, even if they do not affect lexical meaning and are very productive. Ultimately, the discussion boils down to the question of what counts as a lexical unit and whether these units can be integrated in paradigms (see Section 3).

Importantly, aspect membership (i.e. the grammatical function) cannot be explained from derivation as such. Instead, it results from distributional restrictions which do not hinge on pairs of pfv. and ipfv. stem united by an identical lexical meaning, although such pairs constitute a central and necessary part of the system (see Section 2.2). By a similar token, aspect assignment does not depend on (a)telicity or actionality features. These tenets will be briefly explained in the remainder of this subsection.

To start with, although the dual – lexical and grammatical – function is characteristic for prefixes added to simplex (predominantly ipfv.) stems, there is a considerable number of cases in which the prefix only marks change of aspect, but does not alter the lexical meaning of the initial ipfv. stem (henceforth: simplex ipfv. = IPFV1). These cases are called Natural Perfectives, following Janda et al. (2013): the perfectivizing prefix has a meaning profile which makes it compatible with a component of the lexical meaning of the simplex stem. This yields semantic overlap, so that the lexical meaning remains unaltered. Standard examples are Russ. *pisat'*[IPFV] ⇒ *na-pisat'*[PFV] 'write', *stroit'*[IPFV] ⇒ *po-stroit'*[PFV] 'build', *pit'*[IPFV] ⇒ *vy-pit'*[PFV] 'drink', *čitat'*[IPFV] ⇒ *pro-čitat'*[PFV] 'read'. Notably, there are no prefixes "specializing" as such in Natural Perfectives (NatPerfs).[3] NatPerfs

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[3] The number of NatPerfs can only be estimated roughly, but they are not a marginal pheno-

are only claimed for telic stems (resp. their telic uses); in atelic contexts, we usually find the prefix *po-* which, while also perfectivizing, does not mark an action as accomplished, but only as limited in time. Thus, we also get *pisat'*[IPFV] ⇒ *po-pisat'*[PFV] 'write', *pit'*[IPFV] ⇒ *po-pit'*[PFV] 'drink', *čitat'*[IPFV] ⇒ *po-čitat'*[PFV] 'read' (together with inherently atelic stems like *sidet'*[IPFV] ⇒ *po-sidet'*[PFV] 'sit', *kričat'*[IPFV] ⇒ *po-kričat'*[IPFV] 'shout'), while *po-stroit'*[PFV] 'build' is telic simply because *stroit'*[IPFV] is incapable of atelic readings. This is a piece of evidence showing that, regardless of whether telicity is analyzed as a feature of verb (better: stem) semantics or of clause semantics, it is not a defining property of aspect.[4] Instead, the stem-derivational patterns discussed here are grammatical, among other things, because they are not restricted by telicity. Pairs of atelic simplex[IPFV]—prefixed[PFV] stems are numerous and can be productively derived (at least in Russian and many other Slavic languages).

Moreover, there are many verbs which denote punctual events and are, in this respect, related to limited events, for which we find systematic pairings of pfv. and ipfv. stem (in either direction of morphological derivation) and the ipfv. stem simply denotes the same event as the pfv. one without any shifts in actionality. Consider, for instance, Russ. *spotk-nu-t'sja*[PFV] – *spotyk-a-t'-sja*[IPFV] 'stumble', *lop-nu-t'*[PFV] – *lop-a-t'-sja*[IPFV] 'pop', verbs denoting illocutionary acts (Russ. *prosit'*[IPFV] – *po-prosit'*[PFV] 'request', *zajav-i-t'*[PFV] – *zajavlj-a-t'*[IPFV] 'declare'), verbs denoting mental or social events (Russ. *zamet-i-t'*[PFV] – *zameč-a-t'*[IPFV] 'notice, spot', *prost-i-t'*[PFV] – *prošč-a-t'*[IPFV] 'forgive'). The ipfv. stems only "copy" the event meaning of the pfv. stem, but their function in the grammatical system is important, as they serve to replace their pfv. counterparts in contexts for which the latter are avoided or altogether inadmissible (see Section 2.2). In sum, regardless of the actionality type and differences in actional behavior on clause level, stem derivation changing the grammatical behavior is pervasive and able to "overwrite" differences of actionality types and actional shifts between the related stems.

Two more kinds of phenomena are to be mentioned here because they are widespread and, though complicating the system on first sight, on closer inspection they substantially support the generalization that aspect membership is indicated not by particular prefixes (or suffixes), but based on derivational patterns of

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menon. Łaziński (2020) counted about 1,670 NatPerfs in Polish, which amounts to approx. 36% of all aspect pairs acknowledged in authoritative dictionaries. For similar figures concerning Russian cf. Janda et al. (2013), who emphasize that, on average, the token frequency of NatPerfs about 10 times exceeds that of pfv. stems with prefixes that modify the lexical meaning of the simplex.

[4]By the same token, perfective aspect only has the function of limiting the situation denoted by the verb; it *per se* does not mark completion (or similar notions). The latter is possible only with telic predicates.

verb stems which lead to a binary division of stems into grammatical classes. The first "complication" arises with prefixed stems that are able to occur in a double relationship with ipfv. stems. For instance, Russ. *raz-delit'*[PFV] can be considered the pfv. counterpart to *delit'*[IPFV1] in the meaning 'divide, separate' (= NatPerf), but it also occurs as the pfv. stem to the secondary imperfective (= IPFV2) *raz-delj-a-t*[IPFV2] in the meaning 'share (somebody's opinion)'. The same applies to the Polish cognates *dzielić* [IPFV1] ⇒ *po-dzielić*[PFV] 'divide, separate' (= NatPerf) vs *po-dzielić*[PFV] ⇒ *podziel-a-ć*[IPFV2] 'share (somebody's opinion, fate)'. In these cases the two different pairs (IPFV1—PFV vs PFV—IPFV2) represent different lexical meanings. However, in many other cases the relation of IPFV1—PFV—IPFV2 establishes so-called aspect triplets: both ipfv. stems can provide "copies" of the lexical meaning of the pfv. stem, while each of them underlies different constraints and function preferences assigned to ipfv. stems in their entirety (see Section 2.2). The pfv. stem, in turn, functions like a pivot, since it connects the two ipfv. stems in a derivational chain; compare

Table 1: Aspect triplets based on Natural Perfectives (examples)

IPFV1		PFV		IPFV2	
že-č'	⇒	***s**-že-č'*	⇒	*s-žig-**a**-t'*	'burn (TR)'
množ-i-t'	⇒	***u**-množ-i-t'*	⇒	*u-množ-**a**-t'*	'multiply'
gotov-i-t'	⇒	***pri**-gotov-i-t'*	⇒	*pri-gotavl-**iva**-t'*	'cook'

Such triplets depend, of course, on NatPerfs, and they are even more difficult to count than NatPerfs (see fn. 3). Preliminarily, even in conservative counts[5] the number of triplets amounts to considerably more than 500 in contemporary Russian, Polish and Czech (Wiemer et al. forthcoming: §3.2).

Another pervasive kind of triplet is based on atelic IPFV1 stems denoting unbounded activities consisting of rapid cyclic acts (e.g., 'wave', 'shiver', 'blinker', 'knock'). They derive two different pfv. stems, one with the prefix *po-* adding a temporal limit, the other with a nasal suffix (e.g. Russ. *-nu-*) denoting a single act out of the cyclic repetition (semelfactives). Compare

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[5]For a survey of the criteria which have been employed to subdivide aspect triplets cf. Wiemer 2019: 51-56.

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(5) Russian

	IPFV	PFV		IPFV	PFV		IPFV	PFV
a.	mig-a-t'	⇒ **po**-mig-a-t'	b.	vilj-a-t'	⇒ **po** vilj-a-t'	c.	krič-a-t'	⇒ **po**-krič-a-t'
	⇓			⇓			⇓	

PFV mig-**nu**-t'   vil'-**nu**-t'   krik-**nu**-t'
    'blinker'   'wag'   'shout'

In addition, in some Slavic languages, IPFV1 stems denoting atelic activities (among them the same as in (3)-(4)) can have prefixes marking the ingressive phase (e.g., Russ. *za-kričat'*[PFV] 'start shouting', *za-volnovat'sja*[PFV] 'become nervous, start worrying'). Both kinds of triplet provide further evidence that the morphologically related stems distribute over complementary inventories of constraints and functions regardless (i) of the type and tightness of their lexical relation, and (ii) of telicity.

The same holds true for the second "complication": multiple prefixation. Certain prefixes can be used "on top" of already prefixed, or even secondarily suffixed, stems. They do not modify the lexical concept, but add a pluractional[6] or some other quantifying feature, such as repetition (Russ. ***pere-za-pisa-t'***[PFV] *lekciju* '**again** record the lesson'), cumulativity (Russ. ***na-so-bira-t'***[PFV] *ruxljadi* 'collect **a certain/larger amount of** lumber') or distributivity (Russ. ***po-ot-davat'***[PFV] *kvartiry bezdomnym* 'give apartments (**one after the other**) to homeless people'). Prefixes with such functions are called outer or supralexical prefixes;[7] they can also attach to IPFV1 stems (e.g., Russ. *pere-čitat'*[PFV] 'reread', *na-rvat'*[PFV] *(cvetov)* 'pick some amount (of flowers)'), also the numerous "delimitative" pfv. atelic stems prefixed with *po-* belong here (e.g., Russ. *po-sporit'*[PFV] 'quarrel (over some time)'). The combination of (inner and outer) prefixes, possibly with an "interspersed" suffix, creates chains of derivation, which in an IA-fashion can be analyzed like the successive addition of morphemes; see (6). Importantly, the aspect of the stem depends on whether the last morpheme added is a prefix or the suffix. Thus, the entire stem *po-do-za-pis-yva-* in (6) is pfv., but without *po-* it would be ipfv., since *-yva-* is the last one added before *po-* in the derivational history (cf. Tatevosov 2009: 94, from where this example is cited).

(6) Russian
[PFV][*po*-[PFV][*do*- [PFV][*za*- [*pis*][IPFV]]] *-yva*][IPFV]]-*t'*
      | | | | | |
     PFX3 PFX2 PFX1 'write' SFX INF
     supralexical   lexical

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[6]For a classification of pluractionality types cf. Šluinskij (2006) and Wood (2007).

[7]Cf. Tatevosov (2009) for a comprehensive analysis on Russian and further references.

['record']
≈ 'record a little bit additionally' (infinitive)

Such chains resemble increasing scope relations as in syntactic constituency with recursive insertions. In fact, this kind of analysis is useful in showing analogies between syntactic and morphological structure; first of all, the order of appearance of affixes in a derivational chain is important. This kind of analysis has been favored by linguists who emphasize the derivational character of word form structure and try to explain morphology in terms of syntax. Such 'constructivist' thinking (see Section 4.2) largely disregards, or ignores, paradigmatic structure. This approach works reasonably well when morphological structure is concatenative. It is also sensible in view of the fact that the productive derivation of stems renders hard to impossible any attempt at "catalogizing" stems into lexical units: given the productivity of affixes attaching to stems one can hardly determine the number of complex stems that are "part of the language". This number may by far exceed the inventory of verbal lexemes registered in even the most comprehensive dictionaries (Tatevosov 2015: 247).[8] Even more it appears futile to try to establish which stems are related as representatives of identical lexical units (see Section 3).

The issue of lexical identity may be unimportant (or even unintelligible) for those who are just interested in the derivational possibilities of a language, but do not inquire how stems might be organized in a paradigmatic way. However, even if the question of what is a lexeme, or what counts as its representative, cannot be answered exhaustively, this does not disprove the existence of paradigmatic relations. In the first place, we have to ask how paradigmatic relations arise. This question is intimately connected to the issue of how the productive and diachronically stable stem-derivational properties of Slavic languages came to establish a grammatical aspect opposition. We now turn to this issue.

2.2 Grammatical classification in the choice of stems

However we may characterize the association between morphological derivation and the meaning relation of the involved stems, one crucial point needs to be answered: why are those stems members of different aspects and opposed to each other in grammatical terms?

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[8]Slavic languages differ as for the liability for multiple prefixation and for secondary imperfectivization. Although these parameters have remained investigated insufficiently, Russian and even more so Bulgarian can be regarded as the "leaders" in both respects.

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The answer lies in the fact that morphologically and lexically related stems do not distribute randomly over grammatical forms and contexts, but underlie constraints (of different strength) which either block certain combinations of stems with verbal morphology or their combination with other word forms, or which restrict the interpretation of such combinations. The sums of what is called pfv. and ipfv. stems constitute classes whose grammatical distribution can be captured via their distribution over complementary sets of functions and restrictions on different levels of constituency. Thus, regardless how morphologically complex (or simple) a verb stem is, and regardless whether the involved stems are closely related lexically, every stem (with few exceptions) belongs to the **class** of either pfv. or of ipfv. stems **by virtue of restrictions of functions and combinatorial possibilities**.

The function sets and restrictions are not arbitrary, but constitute a complex network in which more peripheral (or specific) functions can to a large extent be motivated from basic functions associated with pfv. and ipfv. aspect. The choice is always binary (pfv. or ipfv.), and it cannot be avoided, since aspect is a property of the stem and thus determined for any form and every discourse token of a verb (see Section 2.1). These properties have led to more or less rigid restrictions in the interaction with other verbal categories, on clause level (complex predicates) and in clause combining. Thus, the grammatical behavior of stems depends on their membership to one of two opposed classes which are, in turn, defined via inventories of functions and restrictions of syn- or paradigmatic combinations; this includes the interpretation of combinations when pfv. and ipfv. stems "compete" with each other. We are thus dealing with the classification of stems based on sum totals of properties which stretch from the core grammar (e.g., tense and mood) via clausal semantics (e.g., modality) to discourse functions (e.g., illocutions, presupposition management).

Many (if not most) of these properties do not depend on the identity of the lexical concept which may unite morphologically related stems, but these properties can be best illustrated with stems which, being connected via morphological derivation, preserve extreme closeness, or identity, of lexical meaning. These are usually called 'aspect pairs'. Contrary to "ordinary" synonyms, the use of these derivationally related stems is constrained by complementary functions, and they can (or must) replace each other under predictable conditions, up to the point that even actionality properties (central for the definition of aspect) are "sacrificed". The most famous example of such replacements (at least in East Slavic, Polish and Bulgarian) is the requirement to employ ipfv. verbs in narrative uses of the present tense. See examples from Polish, which denote the same narrative sequence:

(7)   a. Narrative past
      W 1832 roku Mickiewicz **przyjechał^{PFV}** do Paryża, a dwa lata później **ożenił**^{PFV} **się** z Celiną Szymanowską. Żona **urodziła**^{PFV} mu sześcioro dzieci.
      'In 1832 Mickiewicz **arrived** in Paris, two years later he **married** Celina Szymanowska. His wife **gave birth** to six children.'

   b. Narrative present
      W 1832 roku Mickiewicz **przyjeżdża**^{IPFV} do Paryża, a dwa lata później **żeni**^{IPFV} **się** z Celiną Szymanowską. Żona **rodzi**^{IPFV} mu sześcioro dzieci.
      'In 1832 Mickiewicz **arrives** in Paris, two years later he **marries** Celina Szymanowska. His wife **gives birth** to six children.' (*Narrative present*)

In (7b) ipfv. verbs are chosen, because in Polish (as in Russian) the default association of present tense forms of pfv. verbs with the future has become too strong; therefore pfv. verbs are excluded, although the context is about a sequence of singular events. Simultaneously, ipfv. verbs just "copy" the actionality property of their pfv. counterparts: they denote the same events as do the latter in the past tense (see (7a)) and, thus, serve as placeholders of their pfv. lexical counterparts. For this reason this contrast, and corresponding tests, are considered trivial, and the respective relation between the pfv. and ipfv. stem is a trivial one. This is but an extreme manifestation of lexical identity (with complementary grammatical distribution), and this is why replacements between narrative pfv. past and ipfv. present tense are used as a test of aspectual pairings (at least for Polish and Russian). Other such 'trivial' tests (with varying reliability, depending on the language) are

1. the use of the ipfv. instead of the pfv. verb in the past tense for the denotation of an unlimited repetition of events; compare (8a)-(8b) and (9a)-(9b);

2. the use of the ipfv. stem in the negated imperative (9b) as an equivalent of the unnegated imperative with a pfv. stem (9a).

(8)   Russian

   a. Segodnja Vanja **vyšel**^{PFV} uže v 5 časov.
      'Today Vanja **went out** at 5 o'clock.'

   b. Obyčno Vanja **vyxodil**^{IPFV} tol'ko v 8 časov.
      'Usually Vanja **went out** at 8 o'clock.'

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(9) Russian

    a. **Rasskaži** [PFV] emu, čto ty videl.
       '**Tell** him what you saw.'

    b. **Ne rasskazyvaj** [IPFV] emu, čto ty videl.
       '**Don't tell** him what you saw.'

(9a) expresses a command (or request), (9b) is prohibitive. Again, both stems mark the same type of event, but (in combination with negation) their illocution differs. Remarkably, in North (= East+West) Slavic the pfv. stem can be used in the negated imperative (10a), but only in another illocution, namely a warning (preventive meaning). The ipfv. stem, in turn, can be used in unnegated imperatives as well (10b), but it then contrasts with the pfv. stem (see (9a)) in that it indicates the speaker's assumption that the intended action is presupposed:

(10) Russian

    a. **Ne rasskaži** [PFV] emu (slučajno), čto ty videl.
       '**Don't tell** him (inadvertently), what you have seen.'

    b. Nu, čto ty tam videl? (Ty obeščal mne rasskazat' [PFV].)
       Rasskazyvaj! [IPFV]
       'Well, what have you seen there? (You promised to tell me.) **Tell** me.'

That is, choice of aspect in the unnegated imperative is indicative of speaker's assumptions about absence (pfv.) vs presence (ipfv.) of knowledge and expectations shared with the interlocutor (cf. Padučeva 1996: 71-80 for Russian). This kind of presupposition management also works for contrasts of aspect choice in the future tense, e.g. in Polish (cf. Błaszczak et al. 2014: 193-199), and with modal auxiliaries (for instance, (11a) may be used if such a presupposition is implied).

Aspect choice can also differentiate modal functions, e.g. in minimal pair conditions under the scope of modal auxiliaries as in (11a)-(11b).

(11) Russian, cf. Padučeva (2008)

    a. Zdes' možna **perexodit'** [IPFV] ulicu.
       'You are **allowed** to cross the street here.' deontic, IPFV

    b. Zdes' možna **perejti** [PFV] ulicu.
       'It is **possible** to cross the street here.'

Relevance of aspect choice for modal functions requires two interrelated caveats. First, as pointed out above, (11a) can also be read with an implicature that the

speaker considers the action (crossing the street) to be presupposed. This implicature need not contradict the modal interpretation, quite to the contrary: permission given by the speaker is fairly compatible with the assumption that the interlocutor is waiting for allowance. We see that implicatures triggered by aspect choice under particular grammatical and communicative conditions may "overlap". Second, the differentiation of modal functions might be a side effect of other factors which prove stronger than the distinction between subdomains of modality. For instance, from her study of Russian, Polish and Croatian based on a parallel corpus Divjak (2011: 81) concluded: "Although type of modality remains a significant contributor to aspectual choice, the fact whether the option, permission, order etc. has been given in a generic or specific way outperforms the type of modality in predicting the choice of aspect for the infinitive."

Implicatures can be strengthened and eventually conventionalize. The latter happened to pfv. present tense in North Slavic, which by default has been reanalyzed as pfv. future. Such an implicature has not been entrenched in South Slavic, where pfv. present and pfv. future exist side by side; however, pfv. present tense forms are severely restricted to contexts of suspended assertiveness (otherwise subsumed under 'irrealis' meanings). In addition, in Balkan Slavic present tense forms of pfv. stems in main clauses are dependent on the verbal proclitic *da* (an ubiquitous irrealis marker); cf. Ivanova (2000); Wiemer (2014); Todorović (2015). In turn, in North Slavic the default reanalysis [pfv. present > pfv. future] has been accompanied by the restriction of the inflected future auxiliary (*вọd-*, with different phonological realizations) to ipfv. stems (infinitives). Another restriction on the syntagmatic axis applies to almost all contemporary Slavic varieties (except colloquial Upper Sorbian): phasal verbs ('begin', 'continue', 'finish, stop') can combine only with ipfv. stems.

Already these few examples demonstrate manifold functional cross-relations between forms that belong to core sections of the standard paradigm of the Slavic verb (e.g., the imperative, the future), and these cross-relations constitute a larger network of functional choices and constraints for which aspect choice is a sufficiently reliable indicator. The degree of reliability differs, and many of the contexts triggering these choices are not directly related to aspectuality or temporality, but they can usually be motivated by features like the limiting function of pfv. stems and the potential of ipfv. stems to defocus limits. In many environments relevant for aspect choice telicity does not play a role; also atelic stems (or readings of stems) require a distinction by aspect (and therefore, correlated patterns of stem derivation) under predictable conditions. For instance, the trivial conditions for the imperative illustrated in (9a)-(9b) hold true also for atelic stems (see (12a)-(12b)), and we find the same effect of presupposed actions ("overlapping"

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with allowance) with atelic ipfv. stems (vis-à-vis their pfv. counterparts), as in (13a)-(13b):

(12)   Russian (RNC; N. Mordjukova: Kazačka. 2005)

    a. *Ja sovetuju tebe.* **Poguljaj**PFV *na svežem vozduxe.*
        'I give you an advice: **Walk** (a bit) in fresh air.

    b. *Ja sovetuju tebe.* **Ne** guljajIPFV *v takuju stužu.*
        'I give you an advice: **Don't walk** in this cold weather.'

(13)   Russian (PNC; Polityka, 2006)

    a. *V lesočke ostanavlivaet mašinu, žestom priglašaet vyjti. –* **Poguljaj**PFV *nemnogo, jablok narvi*PFV*. – A možno? – Konečno, možno.*
        'In the woods, he stops the car, with a gesture invites him to leave. **Walk** a little bit, pick apples. – May I? – Of course, you may.'

    b. *A čto, nel'zja? –* **Guljaj**, *guljaj*IPFV*, tol'ko učti, sjuda podxodit' zapreščeno.*
        'So what, can't I? – **Walk**, **walk**, but remember, it is forbidden to come here.'

Moreover, atelic activities can be integrated into sequences narrated in the past tense by using corresponding pfv. stems. Compare atelic pfv. *pomieszkał* 'lived' in a sequence with telic pfv. *schował się* 'hid' and *zadomowił się* 'settled':

(14)   Polish (PNC; Polityka, 2006)
    Czarny Kot najpierw _**pomieszkał**_PFV *w Zielonym Baloniku, potem* **się schował**PFV *(...), a w końcu na dobre* **zadomowił**PFV **się** *w Piwnicy.*
    'The Black Cat first **lived** (a while) in the Green Balloon, the he **hid** (...), and finally **settled** in the Piwnica for good.'

In a sense, this looks like the opposite of the first of the "trivial" tests discussed above with telic verbs (see example (7a)-(7b)): the pfv. stem is used instead of the ipfv. one, since the narrative context forces a sequential reading. The consistency with which ipfv. stems denoting atelic activities undergo phase modification by prefixes varies across Slavic,[9] but the point here is that, regardless of (a)telicity, lexical concepts are adapted to functions so as to fit a particular type of context or

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[9]The languages in the east are more consistent than in the west; cf. Petruxina (2000: 141-230), among others.

construction. This adaptation considerably enhances the amount of stems, however we determine their relation to a lexicon, or a 'constructicon' (in Goldberg's terms; see Section 4.1), of the given language. In this sense, we can say with V. Lehmann (1999: 229), Lehmann (2004: 174) that "the grammaticality of aspect is based on the maximal extension of derivational affixation", i.e. on the degree of approximation toward this maximal extension. However, we cannot (and need not!) assume that each lexical meaning is represented by a pfv. and an ipfv. stem (i.e. by aspect pairs). There are plenties of stems which are to be considered *tantum*-stems.[10] The amount of stems furthermore increases by multitudes if we consider all possibilities of multiple prefixation (see ex. 7 in Section 2.1). Most of these derivatives will never make it into dictionaries (for what sake?), as their derivation is arguably rule-based and many (most?) of them are ephemeral.

Now, all these intricacies of stem derivation, their lexical relatedness and lexicographic status are of secondary concern if we reverse the perspective, i.e. if we look from the sets of functions and constraints (some of which have been discussed above) and their distribution over pfv. and ipfv. stems *in toto*. That is, instead of asking how lexical meanings (or concepts) are adapted to contexts by derivational means, let us ask which functions and constraints are assigned to (or characteristic of) which aspect. Under this angle, pfv. and ipfv. stems, respectively, are understood as classes whose members underlie specific sets of grammatical restrictions and which have a restricted amount of functions from which they can select. Sets of functions and restrictions are defined for each class, not for lexical concepts, and the grammatical classes as such arose from, and strengthen with, these sets of distributional properties. Thus, the formation of opposite (pfv. vs ipfv.) classes, on the one hand, and sets of complementary functions and restrictions, on the other, are mutually dependent. One cannot think the one without the other.[11]

The system properties of the pfv.:ipfv. opposition cannot be explained from derivational patterns alone, although these patterns provide the morphological basis for the recognition of stable form-function mappings and collocational restrictions. We may assume that form-function mappings of morphologically frequent and transparent patterns have been extended to stems with less frequent and/or productive morphological relations (e.g., Russ. *liš-i-t'*[PFV] – *liš-a-t'* IPFV 'deprive', Pol. *kup-i-ć* PFV – *kup-owa-ć*[IPFV] 'buy') and to stems with lexically specific

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[10]This applies even if we admit telic and atelic triplets (as in 5-6) as well as pairs of atelic activities (as in (12a)-(13b)), not accepted by traditional Slavic aspectology.

[11]Notably, also the notion of grammatical recategorization, by which a lexical concept is transferred from one class into an opposite one (Lehmann 1999, Mende 1999), presupposes that such classes exist, in the first place.

affixes (as with a nasal suffix applied only to multiplicatives to yield semelfactives; see Section 2.1). These peculiarities, as either obsolete and unproductive or semantically too specific, have been "absorbed" in more abstract classes. An extreme manifestation of analogical expansion is the rise of suppletive aspect pairs, i.e. the inclusion of etymologically unrelated stems denoting identical lexical concepts, but with complementary distribution over the function sets discussed above; compare Russ. *lovit'*[IPFV] – *pojmat'*[PFV] 'catch', *brat'*[IPFV] – *vzjat'*[PFV] 'take', *klast'*[IPFV] – *položit'*[PFV] 'put', Pol. *widzieć*[IPFV] – *zobaczyć*[PFV] 'see', *mówić*[IPFV] – *powiedzieć*[PFV] 'say, tell'. The suppletive behavior of stems does not differ in principle from suppletion as described for inflection (cf. Veselinova 2006). After all, debates about inflection and derivation turn out as unrevealing, if not misleading (cf. Wiemer 2020a for a discussion).

Figure 1 summarizes the insights discussed above (with the two most productive patterns of stem derivation). The function inventories (at the bottom) mean to include all sorts of restrictions applying to pfv. and ipfv. stems, respectively; part of such restrictions were illustrated above.

(15)   a.   simplex $\Rightarrow$ PREFIX+simplex

   b.   prefixed stem $\Rightarrow$ [prefixed stem]+SUFFIX

       $\Downarrow$ reinterpretation: (a) identical lexical concept

                        (b) different grammatical distribution

(16)   a.   simplex[IPFV] — prefixed stem[PFV] (e.g., Pol. *gotowa-ć* $\Rightarrow$ **u**-*gotowa-ć* 'cook')

   b.   prefixed stem[PFV] — [[prefixed stem]+SUFFIX][IPFV]

       (e.g., Pol. *prze-kaza-ć* $\Rightarrow$ *prze-kaz-**ywa**-ć* 'convey';

       s-praw-i-ć $\Rightarrow$ *s-prawi-**a**-ć* 'cause')

                        $\Downarrow$ analogical expansion

(17)   formation of two classes (= ipfv. vs pfv. stems) acquiring increasingly complementary distribution over function sets, regardless of lexical (non)identity of concepts, of derivational patterns, and of (a)telicity (see Figure 1):

Members of aspect pairs (or partners, or stems united in actionality groups; see Section 3) belong to opposite sets, but are lexically most closely related. Technically, stems united into an aspect pair, including suppletive pairs, may be co-indexed between their sets (= pfv. vs ipfv. class) for the respective lexical meaning. A certain amount of pfv.:ipfv.-pairs united by morphologically transparent
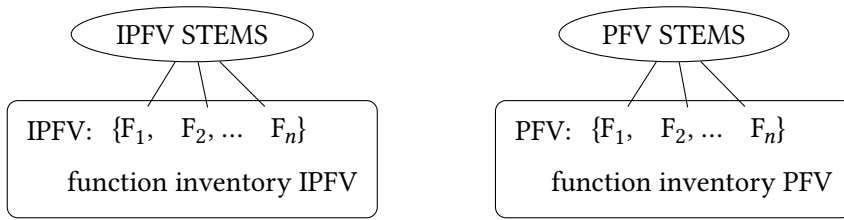
Figure 1: Productive patterns of stem derivation and complementary inventories of functions and constraints

and/or productive patterns is necessary, but these patterns only supply the backbone of the system to guarantee it some regularity in form. Probably, most stems do not allow for co-indexation, because their lexical relatedness is weaker or absent, but they nonetheless belong to either the pfv. or the ipfv. class; this includes *perfectiva* and *imperfectiva tantum* stems. Thus, crucially, the tendency toward complementary distribution over opposite sets of heterogeneous functions applies to pfv. vs ipfv. stems as two generalized and abstract classes, not to particular stems (or their pairs, triplets, groups). The distributional properties apply irrespective of aspect pairs or other considerations concerning lexical relatedness between stems.

This, in turn, does not imply that every stem belonging to either the pfv. or the ipfv. class occurs with every single function associated to this class; it only entails that all those functions that are realized belong to the respective inventory, not to the opposite one. In other words: many stems realize only subsets of the function inventory (and constraints) that are characteristic of their class (pfv. vs ipfv.) in their respective entirety; a function may not be compatible with the lexical meaning of the stem or be inappropriate for communicative reasons.[12] Concomitantly, the strength of the restrictions (and the degree at which invited implicatures have conventionalized) varies, from obligatory choices to more probabilistic distributions.

All these considerations emerge from a thorough re-assessment of diverse observations made about the Slavic aspect system, which are in need of a synthesis in order to adequately describe its architecture. At its gist, this synthetic re-assessment testifies to Slavic aspect as a grammatical system which can best be captured as a classificatory category, in vein with Plungjan's definition cited in

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[12]For instance, many ipfv. stems are unable to express progressive meaning (Lehmann 1998), and many of the functional oppositions discussed above are "available" only for telic or punctual stems (see Section 2.1). Or stems with multiple prefixes (as in ex. 7) are usually hardly imaginable in the imperative (for communicative reasons).

[1] at the beginning. However, strictly speaking, it should be applied to stems, not to words. Moreover, pointing out that stem-derivational basis of this category leads to an assembly of word-formation patterns, is as unrevealing as are debates about the derivational, inflectional or mixed character of the pfv.:ipfv. opposition.

How do these considerations fit in with standard assumptions about the relation between paradigms and lexemes, and how would they modify them? We now turn to these issues.

3 Lexemes and paradigms for pairs, partnerships, groups and networks

According to Plungjan's definition of grammatical classification adduced in [1], it is not forms of one lexeme that distinguish ipfv. and pfv. aspect in Slavic, but different lexemes, each of them having its own paradigm of forms. This corresponds to another well-known definition given by Zaliznjak (1967), who contrasts classificatory and inflectional categories as follows:

> [2] "grammemes [= values of grammatical categories; BW] of inflectional categories characterize particular word forms of a paradigm by opposing them to other word forms of the same paradigm. By contrast, a grammeme of a classificatory category characterizes the entire paradigm by opposing it to other paradigms." (Zaliznjak 1967: 31f.; my translation)

Plungjan and Zaliznjak assume a "classical" notion of 'paradigm', which implies (i) that, on the one hand, there is a practically open set of lexical units (Russ. *leksemy* 'lexemes'), (ii) these units are represented by stems (or roots, if this is a justifiable unit); on the other hand, (iii) there is a restricted and closed set of morphological changes on these stems and/or by auxiliaries (iv) which map onto a set of homogeneous (Russ. *odnorodnye*) functions, (v) but leave unaffected the lexical integrity of the manipulated units. What lexical integrity means is never really specified and rather taken for granted, often as intuitively clear. Regardless of this, the paradigm of a word in one particular meaning (= lexeme) describes a set of matches between forms of that word and their functions as well as their combinatorial restrictions. 'Forms of a word' in practice refers to changes of word forms that apply to its stem.

This said, we may generalize that for those who want to characterize the pfv.:ipfv. opposition as an inflectional category, stems which form aspect pairs

share into one paradigm, though a complex one, because they represent the same lexeme. By contrast, those who prefer to describe this opposition in terms of grammatical classification, would say that each stem of an aspect pair corresponds to a lexeme. These stems are synonymous, but they behave differently with respect to grammatical conditions; and since they represent different lexemes, they also have different paradigms. Although this is not said explicitly, different paradigms may intersect (e.g., for their past tense or forms of mood), but the same lexical concept can also be expressed in different grammatically relevant contexts (namely, in those parts for which the two paradigms do not intersect). These two viewpoints are shown in Figure 2.
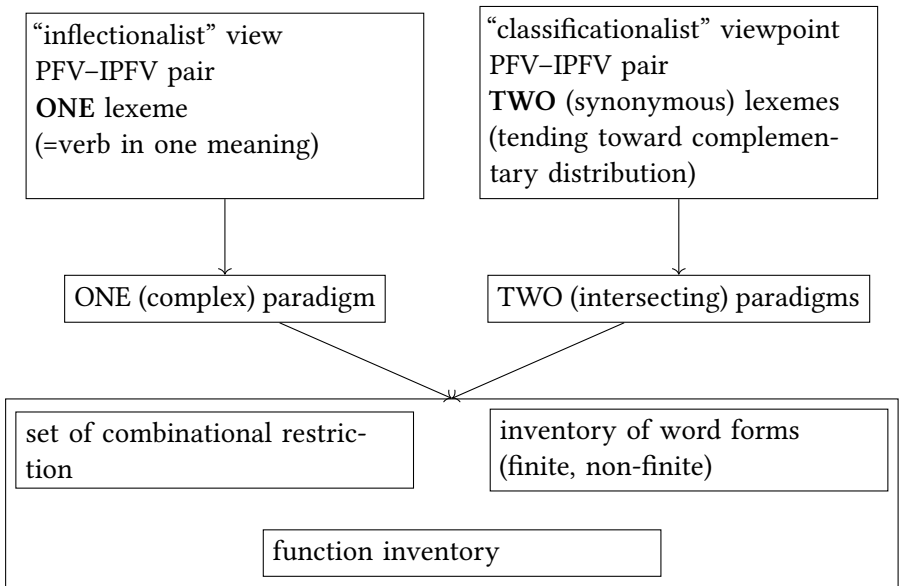
Figure 2: Contrasting views on the grammatical status of aspect pairs

Crucially, both treatments are a necessary consequence of the tight connection between lexeme and paradigm. These notions are assumed to be in a 1:1-relation, in fact they are correlative in that they entail each other.[13] Consequently, if we want to say that pfv. and ipfv. stems have different paradigms, even provided they represent the same lexical meaning (however captured) and are morphologically related, we are forced to say that they are different lexemes. An alternative position is argued for in Breu 1984b,a, who assumes that an aspect pair represents one lexeme whose paradigm is composed of the (finite and non-finite) forms of two

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[13]This makes them similar to converses ('left' vs 'right', 'parent' vs 'child', 'give' vs 'take').

verbs (stems) which differ only in aspect (1984b: 128f.). Here we have a complex set of forms for one lexeme, and it does not matter whether this set is conceived of as one complex paradigm or the intersection of two paradigms. At any rate, no strict 1:1-relation between lexeme and paradigm is required. After all, we see that the connection between lexical relatedness, morphological relatedness and membership in one of two grammatically defined classes is completely opaque.

Furthermore, in Figure 2 the inventory of word forms is shown to comprise both finite and non-finite forms. For our concern, the question whether we include non-finite forms into the paradigm or not would be off the point, because this decision does not hinge on the difference of aspect which is ascribed to stems (i.e. each of the stems, regardless of aspect, has finite and non-finite forms). Thus, the issue of whether transpositional categories (participles, converbs, action nouns and, notabene, the infinitive) are to be considered parts of the verb's paradigm, or whether this extension of the paradigm is to be considered inflectional or derivational (as discussed in Haspelmath 1996), is irrelevant for the relation between pfv. and ipfv. stems. This shows that, however one may want to capture the relation between inflection and derivation, it is of an entirely different type than the distinction between inflectional and classificatory categories. Nonetheless, we may assume that non-lexicalized non-finite forms are part of an extended paradigm (see Section 5), since they are formed regularly, do not affect lexical integrity and are often part-and-parcel of grammatical constructions considered to be parts of the grammar (e.g., participles suffixed with *-n/t-* employed in the passive and other actor-demoting constructions, or the infinitive as a component of the ipfv. future in North Slavic).

Now, Plungjan (2000; 2011) emphasizes that the Slavic PFV:IPFV. opposition is a very suitable example of a classificatory category, based on the assumptions expressed in [1] and [2]. Recently, Tatevosov (2016) has adopted this view and very consistently showed that aspect systems regarded as inflectional (including 'analytic inflection', as in English) are functionally equivalent to classificatory systems (as in Russian). While such equivalence had been pinpointed earlier (without however considering properties of classificatory systems), Tatevosov's equivalence relations are based on a rigid procedure of determining actionality classes for which verbs unite into groups with an identical lexical meaning (cf. already Tatevosov 2002). Tatevosov claims to be agnostic as for whether productive derivational patterns may be considered inflectional, and his procedure does not rely on lexical identity defined by metalinguistic periphrases (Tatevosov 2016). Instead, his analysis is based entirely on model-theoretic considerations and extensional (formal) semantics, combined with a generative, morpheme-centric approach which relies on assumptions typical of IA-models (Tatevosov 2015) or,

more broadly, on 'constructivist' reasoning (see Section 4.2). This is why no consequences follow from his recognition of the Russian (Slavic) aspect system as a classificatory category: grammatical classification simply remains a label, but no account is given of its properties and consequences for the analysis of such an aspect system.

In turn, representatives of Cognitive Grammar have advocated networks of Russian verb stems as adequate representations of units which are very closely related as lexical concepts (Janda 2007). Here lexical identity is relativized and consciously regarded as fuzzy. Similar attempts in which the notion of aspect pairs is relativized as just one (although very salient) type of derivationally marked relation between stems with some shared lexical concept have been developed, first of all, by V. Lehmann (1988 and subsequent publications). These relations are captured as partnerships between pfv. and ipfv. stems, so that aspect pairs can be redefined as the tightest and grammatically most rigid kind of partnership. In general, aspect partners are divided into core, peripheral and only contextually determined ones (for the most comprehensive account based on Russian cf. Mende et al. 2013). Furthermore, an account is given of semantic motivation, which conditions actionality types and explains the direction of semantic derivation.

After all, regardless of whether we are dealing with aspect pairs, with aspect partnerships (à la Lehmann), with actionality groups (à la Tatevosov) or with networks (à la Janda), what we miss in all these approaches is an account of the behavior of pfv. and ipfv. stems beyond the domain of actionality and event-external pluractionality. We also miss an explanation of how categorial syncretisms (like the present > future shift of pfv. stems in North Slavic) and partially very rigid replacement conditions arising from such syncretisms are to be treated in a network of functions and restrictions which themselves can be conceived of as paradigms (on a more abstract level) and which, notabene, underlie a reasoning like V. Lehmann's (1999) 'grammatical recategorization' (see fn. 11) or Breu's (1984b) 'grammatical homonymy'.

As the sketchy analysis in Section 2.2 should have shown, whatever the pattern of stem derivation looks like, its "output" (= ipfv. or pfv. stems) only provides the "input" for further operations with other units on a syntagmatic (morphological or, mostly, syntactic) level for which the choice of ipfv. vs pfv. stem is constrained, either by blocking one of the two or by yielding different interpretations. In other words: ipfv. and pfv. stems (and their paradigmatic opposition) enter into constructions, i.e. into units with a larger format than stems, but aspect choice (or the PFV.:IPFV. opposition) as such is not itself a construction; it is simply a central factor (or component) within possible templates for those

larger constructions. The question to be pursued now is whether templates that describe aspect choice can themselves be integrated into paradigms, albeit in an unorthodox and complex way. Does this make sense? And to what extent is work in Construction Grammar and Word-and-Paradigm models helpful?

4 Word-and-Paradigm and Construction Grammar

In order to assess the possibilities, but also the limits, of Construction Grammar and Word-and-Paradigm morphology to capture the grammatical character of the Slavic aspect opposition, the basic tenets of both families of approaches to grammar and lexicon will be summarized in this section. This includes highlighting their intersection. I concentrate on those claims which allow me to take stance if there are "aspects of Slavic aspect" that cannot be integrated into these approaches, or that can only be integrated if certain issues are amended or modified.

4.1 Construction Grammar

Construction Grammar (CG) implies a theory of linguistic knowledge: "a construction is a generalisation that speakers make across a number of encounters with linguistic forms" (Hilpert 2014: 9). This knowledge "includes both items and generalizations, at varying levels of specificity", which pertain to "conventional, learned form-function pairings at varying levels of complexity and abstraction". The latter means that we "highlight the commonality between words and larger phrasal units" (Goldberg 2013: 16f.). Words differ from grammatical constructions only in terms of their internal complexity (Michaelis & Lambrecht 1996: 216). By the same token, there is no strict divide between grammar (morphosyntax) and the lexicon, or between rules and an inventory of ready-made units to which the rules apply to yield more complex units. Instead, grammar and lexicon condition each other in that linguistic knowledge is organized in hierarchies of schemas. These, in turn, result from abstractions that are generalized from experience on the basis of already acquired exemplars. For instance, "the coinage of new words depends on abstractions over sets of existing words and word forms in the lexicon of a language" (Booij 2010: 3). Analogical proportions are crucial, but it is not necessary that complex forms are "broken down" into smallest meaningful units (a.k.a. morphemes); rules are a subsidiary notion, while schemas are primary.

Constructions, in general, are defined as any linguistic pattern for which "some aspect of its form or of function is not strictly predictable from its component

parts or from other constructions recognized to exist. In addition, patterns are stored as constructions if they are fully predictable as long as they occur with sufficient frequency" (Goldberg 2006: 5). The last sentence is important, since – contrary to an earlier definition in Goldberg (1995: 4) – even entirely predictable (and semantically transparent) patterns of form-function pairings can count as constructions. This holds true in particular for morphology, i.e. for units recognized as words: conventionalized complex words are listed in the lexicon even if they result from very productive patterns, but they are linked by inheritance relations (so that their idiomatic part can be calculated by subtracting the recurrent, inherited properties); cf. Booij 2013: 257-264. Inheritance relations reach down to morphemes, i.e. parts of word forms. However, although it is recognized that words can consist of smaller parts (= morphemes), morphemes are not given an independent theoretical status outside sets of word forms;[14] they are rather considered fillers of positions, or slots, within word forms: "A constructional idiom is a (syntactic or morphological) schema in which at least one position is lexically fixed, and at least one position is variable." (Booij 2013: 258) This again underpins parallels between morphological structure and syntactic constituency (cf. also Booij 2010), but the crucial point is that this structure is not composed bottom-up from smaller building blocks; instead, parts are defined, or inferred, from wholes. This holds true not only for the syntagmatic, but also for the paradigmatic level: any units contained in constructions (of word format or larger units) are interpreted with respect to larger units in which they partake (syntagmatic axis) and with respect to other units of the same format with which they stand in a replacement relation for a slot in a construction (paradigmatic axis). Both dimensions support the recognition of patterns which provide cues for analogical transfer between morphologically related word forms (whose segmentability may differ and whose semantic relation may also be opaque in form, e.g. because of diverse morphonological processes).

This top-down approach has several advantages, among others it allows for unified accounts of concatenative and non-concatenative morphology (e.g., reduplication, apophony) and of paradigmatic relations between word forms. Here a distinction between inflection and derivation becomes irrelevant. For either type of morphology, correspondences between schemas can spell out analogies even

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[14] Goldberg (2013: 15) regards morphemes as 'partially filled words'. Booij (2010: 15) emphasizes that "the minimal linguistic sign is the word", and "bound morphemes form part of morphological schemas, and their meaning contribution is only accessible through the meaning of the morphological construction of which they form a part". Furthermore: "surface forms are regarded as basic morphotactic units of a grammatical system, with roots, stems, and exponents treated as abstractions over a lexicon of word forms" (Booij 2010: 256)

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if form-function matches display irregularities, e.g. if the common parts of cor-
related word forms show a good deal of variation (otherwise called allomorphy),
if there are "gaps" between particular instantiations of patterns, or if base forms
are lacking. This can be illustrated with words formed by Engl. *-ism* vs *-ist*, as in
(18):

(18) *altru-ism altru-ist*
      pacif-ism pacif-ist
      marx-ism marx-ist
      social-ism social-ist

It is easy to generalize the meaning relation between the words on the right
and on the left by the formalization in (19):

(19) $<$ [x-ism]$_{Ni}$ ↔ SEM$_i$ $>$ ≈ $<$ [x-ist]$_{Nj}$ ↔ [person with property Y related to
      SEM$_i$]$_j$ $>$

The parts in $< … >$ represent constructions, ↔ indicates a form-meaning cor-
respondence, SEM stands for a semantic representation, or paraphrase. Impor-
tantly, ≈ points out the paradigmatic relation between the words to the left and
the right, but since these words have a common part (x), their alternating parts
(*-ism* vs *-ist*) also stand in a paradigmatic relation to each other; simultaneously,
they can be interpreted as devices that mark some kind of semantic, or functional,
change, regardless of whether x exists in isolation or not (see below). Moreover,
this change can be quite concrete and palpable (e.g., agent from action, or mem-
ber of a group) or very abstract and unrelated to the lexical content of the entire
unit. The examples in (18), and their generalization in (19), are closer to the con-
crete pole.

The list in (18) could be made considerably longer by the productive applica-
tion of (19), but even the few instantiations given in (18) demonstrate that not only
-ism and *-ist* do not exist in isolation, but also the "bases" of these word formation
devices are often lacking. These two parts are thus mutually dependent, although
each of them can be combined with other instantiations of the respective other
part. It is this productive combinatorics, based on analogy, which makes these
words segmentable (or: which make speakers infer about their parts). In partic-
ular cases, e.g. *social-ist* or *marx-ism*, a base exists, but the complex word does
not derive from it semantically, since *social* and *Marx*, respectively, mean some-
thing different. Thus, the meaning of these complex nouns "is not simply a com-
positional function of their constituent parts but contains the meaning of a re-
lated word with the same degree of complexity" (Booij 2010: 33, emphasis added).

In general, models based on bidirectional correspondences of word forms yield more satisfactory results on non-concatenative patterns (including suppletion); in addition, they are often even more convincing for concatenative patterns like, e.g., cross-formations and back formation (Haspelmath & Sims 2010: 47-51). In Section 5 I will come back to this kind of reasoning and the formalization in (19), but here parallels with patterns of stem derivation characteristic of Slavic aspect become obvious. The crucial difference compared to "usual" cross-formation and back formation is that, with Slavic aspect, stem derivation can lead both to synonyms (a) without a change of syntactic class, but different grammatical distribution, and to synonyms (b) with a change of syntactic class ("word class changing inflection" in Haspelmath 1996), so that the same lexical concept is made available for different syntactic contexts. Thus, the functional change between the paradigmatically related word forms is considerably more abstract than in the word form pairs in (18) and the schema in (19).

CG has also been employed in studies on grammaticalization. Representatives of CG have emphasized that grammaticalization often starts with the conventionalization of constructions (mostly in a narrower, discourse-to-syntax oriented understanding). Here it is, among other things, prefabs in the sense of Bybee (2010: 55), i.e. "[l]exically filled, instance-based constructional patterns occurring with sufficient frequency" (Nikiforidou 2009: 26f.), which lead to conventionalized constructions. A related issue has been elaborated on by Diewald (2009): constructional frames supply the loci for critical contexts in which either particular elements (words, phrases) or abstract constructions as such (e.g., some clausal frame with a specific word order) gain significance and strengthen pragmatic implicatures (first of all, by resolving erstwhile meaning conflicts between different components of the constructional frame), so that eventually these implicatures become conventionalized meanings of the given construction. Diewald particularly focuses on paradigmatic contrasts between constructions. These consist either in the presence/absence of particular elements, which yields a binary opposition, or in the choice of one of the members from among a relatively closed set (e.g., modal auxiliaries, propositional modifiers like epistemic particles), which renders the opposition multiple. These two types of paradigmatic choices correspond to 'transparadigmatic' and 'intraparadigmatic' variability, respectively (cf. Chr. Lehmann 1995: 138f.). Diewald also emphasizes the role of obligatoriness (cf. also Diewald & Smirnova 2010b); this, in fact, is but a concomitant of paradigmatic tightening and a loss of transparadigmatic variability.

While, for the present purpose, grammaticalization is of secondary concern for our topic, it is worth considering whether and how the relation which Diewald establishes between paradigm structure and obligatoriness, on the one hand, and

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between the conventionalization of constructions and pragmatic strengthening, on the other, might be applied to the paradigm structure of stem-derivational and classificatory aspect. We will see that such a transfer is not feasible unless we considerably modify our notion of paradigms (or of paradigmatic structure) and, above that, do justice to the particular conditions which make the choice of aspect obligatory and strengthen its function inventory in Slavic languages (see Section 5).

4.2 Word-and-Paradigm morphology

The area of intersection between CG and Word-and-Paradigm (WP) approaches in morphology is large. It already becomes evident when we realize that WP "establishes correspondences between different sets of grammatical properties and the different forms of a word that realize each one of these sets of properties" (Fábregas & Scalise 2012: 31). That is, "words match a schema, and a schema subsumes words"; this schema is based on 'morphological correspondence' between the phonological realizations and the functions of the word forms (Haspelmath & Sims 2010: 46f.). Thus, for English nouns the schema in (22) is a generalization over (21), and (23) represents a correspondence rule referring to (22) (cited from Haspelmath & Sims 2010: 46f.):

(20)   Words: *bags, keys, gods, ribs* …

(21)   Lexical entries for words

$$\begin{bmatrix} /bægz/\text{N} \\ \text{'}bags\text{'} \end{bmatrix} \qquad \begin{bmatrix} /k^hijz/\text{N} \\ \text{'}keys\text{'} \end{bmatrix} \qquad \begin{bmatrix} /gɑdz/\text{N} \\ \text{'}gods\text{'} \end{bmatrix} \qquad \begin{bmatrix} /rɪbz/\text{N} \\ \text{'}ribs\text{'} \end{bmatrix}$$

(22)   Word-Schema

$$\begin{bmatrix} /Xz/\text{N} \\ \text{'plurality of } x\text{s'} \end{bmatrix}$$

(23)   generalized

$$\begin{bmatrix} /X/\text{N} \\ \text{'}x\text{'} \end{bmatrix} \longleftrightarrow \begin{bmatrix} /Xz/\text{N} \\ \text{'plurality of } x\text{s'} \end{bmatrix}$$

What is called "words" here might better be labelled 'word forms'. While WP-approaches do not deny that words (or word forms) are often composed of smaller units, and that these units usually have meanings of their own, their endeavor is not to decompose word forms into morphemes in order to construct from them the meanings of whole word forms (in a more or less compositional manner). WP approaches do not pursue a bottom-up procedure of this kind, but, conversely, they abstract away from particular phonological realizations (and concomitant alternations in the form of purported units on a subword level) of word forms and rather analyse in a top-down manner by comparing the shape of particular word forms with their variation according to some homogeneous functional parameter(s). This principled difference – constructing larger from smaller units vs abstracting away from particular forms and asking for functions due to which these forms enter into replacement relations – is the reason why Blevins (2016) distinguishes between 'constructive' and 'abstractive' models of morphology. WP approaches are clearly abstractive, while Item-and-Arrangement (IA) and Item-and-Process (IP) approaches are 'constructive' because they rest on the basic assumption that larger units (words, phrases) are constructed from smaller ones according to certain rules.

From a 'constructivist' viewpoint, paradigmatic relations are of no primary concern, often they are neglected or even denied altogether. In turn, 'abstractivists' may not feel forced to assume any such units like stems (or, even more so, roots), although word schemas and correspondence rules suggest that word forms can be analyzed into smaller parts. Constructivist reasoning accepts morphemes as basic units of analysis, it has introduced allomorphs as a concept (and morphonology as an intermediate structural level) by which different phonological realizations of meaningful distinctions in word forms correlate with their phonological environment on morphological conditions. IA-models may be sufficient for purely concatenative morphology, but morphonological alternations leading to lack of perceptual transparency already require an IP-model (Plungjan 2000: 72f.). Up to here, we need not assume any paradigmatic relationship between (the variation among) the involved units, but no later than with suppletion a notion enters the scene which forces us to assume paradigmatic relations.

WP models have usually been called 'realizational', since their primary interest lies in the discovery of patterns of replacement (given some sufficiently defined contextual conditions) from among a set of forms which share some lexical meaning, but also match variation with regard to certain function(s). In order to disclose such correspondences the match between word form variation and function variation must be predictable (at some minimal degree), and the more regular the pattern is in formal expression, the easier it is to discern. More traditional

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WP-varieties have figured out such matches on a descriptive level, while more recent WP-varieties move further by demonstrating that members of a paradigm have different weight, since some of them betray a higher degree of reliability, so that on their basis one may predict other members. That is, paradigms are often asymmetric, and parts of them are interdependent in a way that they provide cues for implications concerning the structure of the entire paradigm. WP-varieties which focus on these relations can be called 'implicational'. They show that paradigms supply structures which should be investigated from the point of view of information theory (and discriminative learning); cf. Blevins (2016).

Remarkably, neither the mainstream of 'constructive' models nor the many varieties of 'abstractive' models are very explicit about what they take to be a lexical unit, and how such units are to be identified (irrespective of form). Simultaneously, discussions about adequate models of morphology, or morphosyntax, have circulated around inflection (or whatever is considered to be inflection), and the application of the proposed models is usually considered to be problematic for (whatever is considered) derivation.[15] The reason appears to be that derivation traditionally denies the lexical identity of the involved word forms (see Section 6). Regardless of this, apart from the attention paid (or not paid) to paradigmatic relations, a main difference between abstractivist and constructivist thinking consists in the format of units that are assumed as basic (words or, maybe, also stems vs morphemes, including roots) and in the direction of analysis ('from wholes to parts' or 'from smaller to larger units'). As for these basic assumptions, WP sides with CG.

After all, IA-, IP- and WP-models (differentiated for realizational and implicational varieties) can be ordered on a gradient (Blevins 2016: 14-17, also Plungjan 2000: 71-78), and probably none of them is able to lay claim for yielding an adequate picture of linguistic reality covering all types of form-function variation in the morphosyntax of all languages. Consequently, there is *per se* nothing bad in combining theoretical premises and analyses, provided the following alternatives are equilibrated: are grammatical oppositions (or: categorial oppositions in morphosyntax and/or on discourse level) better inferred from the combination of distinct units and rules of their combination? Or are they captured more adequately by a hierarchy of schemas and patterns for which units of lower formats are inferred via analogical proportions and replacement conditions for slots (see Section 6)? This includes the question whether the "output" of combinations is

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[15]Spencer (2013) seems to be an exception. Characteristically, Spencer 2020; submitted argues for a tight mutual connection between the notions of 'paradigm' and 'lexeme' without "bothering" too much about an inflection-derivation divide.

transparent (= compositional) or not, but even more so two other things: first, we need to define the format of the units that may be combined and, second, we need to understand what triggers the grammatical (or, more broadly: categorial) opposition, i.e. which syntagmatic and/or paradigmatic cues are responsible as reliable indicators (or even predictors) of matches between oppositions in form and functional distinctions. Such considerations provide the background for the following subsection.

4.3 Units, choices, and conditions of replacement

To resume, the derivational patterns relevant for Slavic aspect (Section 2.1) yield stems belonging either to pfv. or to ipfv. aspect by virtue of opposite sets of functions and constraints with complementary distribution (Section 2.2). On the "morphological surface" the patterns look very heterogeneous. This is not a problem for WP- or CG-models, since what counts for them is schemas and correspondences. However, as we concluded in Section 3, stem derivation only provides the "input" for templates of larger constructions in which aspect assignment is not "visible" as such, since it depends on the morphological and lexical relatedness of the given stem to other stems, and it is only this relation and the membership in one of two classes (defined via opposite sets of constraints and functions) by which a binary contrast arises. This contrast is highly abstract, both in form and function. Let us therefore look closer at schemas and correspondence rules used in CG and WP and ask whether they can implement this contrast. See first the word-schema in (22) above and the related correspondence rule in (23), the latter repeated here for convenience:

(24) $\begin{bmatrix} /X/\text{N} \\ \text{`}x\text{'} \end{bmatrix} \longleftrightarrow \begin{bmatrix} /Xz/\text{N} \\ \text{`plurality of } x\text{s'} \end{bmatrix}$

Here we assume two segments: a unit bearing some lexical meaning (= X), and a unit indicating a value from some grammatical category (= z). The latter notion may be extended to any kind of categorial distinction (or opposition). In this example, the complex expression Xz is classified as a form of a noun; X may be considered a stem. Now, regardless of whether z indicates some value of another categorial opposition as well (i.e. whether it is a portmanteau morpheme) or not, it acquires some paradigmatic value if it stands in a replacement relation with another segment (say, y) marking, for instance, that a word form Xy denotes a duality of Xs. Lack of either z or y in a word form based on X can then be interpreted as the denotation of a single entity, provided either z or y

otherwise always appear if a plurality or duality of *X*s is referred to. This is how the standard analysis of a simple paradigm of number of nouns goes, in a simplified manner and abstracting away from possible differences in phonological realization (alias allomorphy), but implying obligatoriness.

Note that in the last example the "identifier" of the grammatical function (*x*, *y* or zero) belongs to a subword level. But nothing changes in principle if we apply a correspondence rule as in (23) to units of other formats, for instance to words as possible parts of clause frames, e.g. German modal particles in declarative or interrogative sentences, as in the following made-up example (25b):

(25) a. *Ich habe schon abgewaschen.*
          'I have already done the dishes.'

      b. *Ich habe **ja** schon abgewaschen.*
          'I have {ja} already done the dishes.'

By using the particle *ja* the speaker reminds the interlocutor(s) that the information ('I have already done the dishes') should be known to them. The particle thus functions as a signal that the speaker assumes the content of their message to be presupposed in the communicative space shared with the interlocutor(s). Diewald (2006) and Diewald & Ferraresi (2008) show that this function is a general property of German modal particles. In addition, these particles mark the utterance as non-initial in a discourse, which seems to follow by implication from the presupposition assumption. On this basis, it is easy to create a correspondence rule in which a modal particle ($_{MP}$) contributes this kind of meaning to a very general type of construction, namely to sentences ($_S$) which denote propositions (*prop*) or actions (*act*),[16] and marks them as non-initial. The form of such a correspondence rule would be analogous to (23); see (26), ⊃ means 'implies':

(26) $/X/_S$ ↔ $/X_{ja}/_S$, or generalized: $/X_{MP}/_S$
      '*prop/act*' 'proposition or action presupposed and shared with interlocutor'
      ⊃ 'non-initial in current discourse'

Analogous correspondence rules could be created for the meaning contribution of modal auxiliaries or of any other modifiers on the level of predication, clause or sentence. Especially if their set is small, they may enter into replacement relations and, thus, form a paradigm, at least in a loose sense.

There is, of course, a difference between the "morphological" example to which the schema in (23) applies, on the one hand, and modifiers on higher levels of

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[16]Some modal particles are also used in directives, e.g. *doch*: *Mach (doch)!* ≈ 'Just do it, will you!'.

constituency, on the other. On the morphological, i.e. word level, those parts which indicate some grammatical value (*x*, *y*, *z* in the example above) often become obligatory in a strict sense. For instance, in German, English or Russian nouns cannot remain unspecified for number (in contrast to other languages, e.g. Turkish), even if arithmetic count proves insensible (e.g., with mass nouns). As a consequence, lack or change of some phonological segment in the word form is indicative of some value in the relevant functional domain (here: '1' vs '>1' or, if there is a dual, '1', '2', '>2') or reinterpreted in accordance with whatever number marking means in non-trivial (i.e. non-arithmetic) usage contexts. In structuralist terms, this reasoning implies an equipollent contrast, while privative contrasts would not yield such effects, i.e. the functional value (trivial or non-trivial one) remains just unspecified. In 'constructivist' approaches this reasoning leads to the postulation of zero morphemes. However, as a rule of thumb, the larger the format of constituents above word level, the worse the conditions get for postulating zero marking, and this mirrors decrease in strictness with which one can speak of paradigmatic tightening and with which slots (within units of larger format) can be discerned. Consider modal auxiliaries (as Engl. *can*, *may*, *must*): intraparadigmatic replacement conditions between them may become tighter, but nonetheless we can hardly pinpoint syntactic conditions which make their use compulsory. We may possibly formulate communicative conditions under which modal auxiliaries are more likely to appear,[17] but this does not lead to the same level of predictability which we observe for the explicit distinction of many of the categories that are marked on words. So-called analytical inflections (e.g., periphrastic tense or mood forms) are no counterexample to this consideration, they rather confirm it, because their 'auxiliary words' fill out positions in paradigms for functions that are expected beyond some communicative needs.[18] Expectability drawn simply from communicative needs would still leave some freedom of choosing the categorial distinction as such to the speaker.

Thus, even if transparadigmatic tightening for clause- or utterance-level modifiers may occur it normally still leaves the speaker some leeway,[19] including the possibility to mark the categorial distinction by some other means. For instance, Diewald argues that German modal particles are compulsory for the function

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[17]Compare the distinction between language-internal and communicative obligatoriness made by Diewald & Smirnova (2010a: 5).

[18]Moreover, slots filled by periphrasis usually build on already established paradigmatic relations between 'synthetic' word forms (Haspelmath 2000, Plungjan 2011: 61-66, Popova & Spencer 2015).

[19]To continue reasoning in structuralist terms, one may say that a privative opposition (marking vs not-marking) has not yet turned into an equipollent contrast.

described above and that, consequently, the contrast between (25a) and (25b) implies that (25a) does not convey this function (since it is, as it were, zero-marked). However, although modal particles are a very convenient, frequent and, thus, expectable way of expressing the speaker's presupposition in German, it seems too categorical to deny utterances without modal particles the possibility to induce such presuppositions, e.g. just by intonation, i.e. to deny that utterances without modal particles can be used if the speaker wants to express such a presupposition.[20]

After all, regardless of how this issue may be further settled, "morphological examples" like number marking on nouns and modifiers of higher levels of constituency have one thing in common (despite all other differences): they can be spelt out by pointing to distinct elements (traditionally called morphemes, words, etc.) or at least to constructions (with different complexity of constituency). This sets them apart from obligatoriness conditioned by the choice of verb stems, which in Slavic languages is inevitably connected to aspect; this choice is binary and, apart from a limited amount of biaspectual (or anaspectual) stems, one cannot circumvent it. The latter property, namely: lack of transparadigmatic variability, is similar to number on nouns (in Slavic, Germanic, and Romance languages), but different from what we find with, e.g., modal auxiliaries and arguably with modal particles as well. Concomitantly, it is not bound morphology as such that triggers the distinction between aspect, but derivational patterns (i.e. the relation between two or more stems) correlated with sets of functions and restrictions.

Moreover, the affixes which relate verb stems to each other apply prior to any tense or person/number marking (or suffixes deriving non-finite forms). That is, although the patterns work on a subword level, what is crucial is not morphemes in their simple concatenation, but the relation between stems, which is intermediary between word and morpheme. In addition, we have to account, first, for the degree of lexical closeness between the involved stems and, second, often also for the step at which the respective affixes attach in a derivational chain (see Section 2.1). That is, what is implied by these patterns cannot be captured simply as constructions or by correspondence rules of the type illustrated above. We rather need templates which, to a certain extent, include rule-based information about, first, the procedure of how to "get" one stem from another and, second, about alternations in phonological form (which are frequent and predictable, for instance, at the border between stem and imperfectivizing suffix). However, regardless of whether we allow for rules (operating on stems, not on words) or rely

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[20]Modal particles are a bad example also for the reason that, at least in German, they can be combined in the same utterance; they are thus not even organized in stricter paradigmatic replacement conditions.

only on schemas, we have to admit that, in analogy to (23), what corresponds to *Xz* cannot be subdivided into a part which specifies the aspect value (pfv. vs ipfv.) and a part which bears the lexical meaning.[21] That is, neither an abstractive (WP, CG) nor a constructive (IA or IP) approach brings us to the ultimate goal; we seem better advised to combine elements of both (see Section 4.2). What the *Xz* corresponds to is most often only infinitive or present/non-past tense stems ('allostems'), e.g. Russ. *pisa-* or *piš-* 'write.IPFV' or Pol. *przepis-ywa-* or *przepis-uj-* 'write anew.IPFV'. The same applies if something precedes *X*, i.e. a prefix, as in *na-pisa-* vs *na-piš-*.PFV (see (3)-(4)). Moreover, even if allomorphy is a notion acknowledged in one's analysis, it is appropriate for morphonological changes that distinguish the present (or non-past) from the infinitive stem, but entirely inappropriate for variability in the choice from 15+ verbal prefixes, which in most cases change lexical meaning, but also may serve to simply indicate that the unit is a pfv. verb (see Section 2.1). That is, a correspondence rule like /X/ ('*x*') $\leftrightarrow$ /$_{PFX}$X/ ('pfv. of *x*') would apply only to a limited amount of aspect pairs and triplets; it does not reflect the dual character of verbal prefixes as changes of (partial) word-forms that indicate pfv. aspect, but in most cases also modify the lexical meaning (which jeopardizes the relation between *X* and $_{PFX}X$ out of a paradigm of forms which realize the same lexical unit). Nor does it help to understand in which cases, nonetheless, $_{PFX}X$ just means 'pfv. of *x*' (as with Natural Perfectives), among a couple of other issues.

Nothing changes for all these considerations if, instead, we try to apply a more complex correspondence rule, e.g. a schema as in (19). We see that the applicability of correspondence rules (or schemas) may depend on the format of the units which, in some way or other, have to be assumed on subword level. They cannot simply be transferred from a morpheme level to stems in particular if the change of the stem itself carries information about the value of the grammatical opposition (pfv. vs ipfv.), i.e. subtractive of tense and agreement or non-finiteness markers, which are only added to these stems.[22] In addition, the aspect value hinges on patterns of stem changes that are not unified: not only do we have two predominant patterns with different directions of derivation (see (1)-(2)), but many idiosyncratic ones (mostly obsolete remnants of earlier layers of stem derivation) and, above all, even one pattern which is based on a monofunctional suffix creating pfv. stems, but only in the confines of a specific semantic class of atelic

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[21]Or, in analogy to (26), into a part denoting propositional content and its modifier.

[22]Even from a constructivist perspective, one would not say that an unprefixed ipfv. stem has a "zero prefix" by which imperfectivity is marked, or conversely that prefixed pfv. stems have a "zero suffix" since their ipfv. counterparts are often marked by an extra suffix (at least, I am ignorant of any such attempt).

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stems (or lexemes, for that matter), namely semelfactive {nǫ} (see Section 2.1 and Section 3).

Even from a strict 'constructivist' point of view it would be totally off the point to try to subsume such a variation of patterns on the "morphological surface" under allomorphy (and presumably nobody has tried to do so). For 'abstractivists' the problem differs, namely: can we imagine a common paradigm for some pfv. and ipfv. stem, provided we have reason to assume that they share an identical lexical concept or are even close synonyms? This problem cannot be tackled with correspondence rules. Therefore, it seems reasonable to consider whether paradigms may be based not so much on the form of particular stems (and of how they are composed from morphemes) and not too much tied to specific patterns of stem derivation, but, instead, primarily be built on categorial restrictions on different levels of morphosyntax and discourse which yield a sufficiently reliable distribution, or patterns, of oppositions tied to the choice between pfv. and ipfv. stems. These patterns may be described in templates, but in a form which at present hardly anybody would want to call 'constructions'.

How can these insights be exploited for modeling the architecture of Slavic aspect? And, conversely, what can be gained for morphological theory, or a theory of grammatical categories? We are now going to explore these questions in the last two sections.

5 Extended notion of paradigms: a proposal

The proposal rests on two pillars. First, aspect choice is obligatory, and since this choice amounts to making a decision between verb stems it is these stems which are in paradigmatic opposition for an abstract feature, namely PFV.:IPFV.. Then, second, the question is what determines this choice in the first place. As explained above (mainly in Section 2.1), verb stems are ascribed pfv. or ipfv. aspect according to sets of functions and grammatical constraints over which they distribute in a (more or less) complementary manner. By virtue of these sets verb stems belong into one of two opposite classes, so that a binary opposition is established. These conditions justify considering Slavic aspect as a classificatory category. By the same token, issues like how many aspect pairs (or triplets) are there, and how regular are the morphological relations between lexically close stems, are important only to the extent that there must be some backbone of the system in order to (i) supply regular patterns of derivation to be applied productively, and in order to (ii) set up paradigmatic replacement conditions between stems denoting identical (or very close) lexical concepts, i.e. to create minimal

pair conditions (as exemplified throughout this paper). This backbone in terms of formal patterns and of lexical relatedness provides the basis for analogical transfer, both for the productive application of rules (or schemas) and for relating stems of opposite aspect with obsolete or less frequent patterns, briefly: for the integration of new and old stems into a system which distributes them over two classes defined via sets of constraints and functions.

Consequently, we have a maximally simple paradigm to start with, which is conditioned by an inevitable binary choice: either a member of the ipfv. class or a member of the pfv. class, whatever other grammatical categories might be expressed by a verb, and in whatever discourse context. Whenever a verb is involved in a categorial (grammatical or pragmatic) contrast, this influences aspect choice – since speakers cannot avoid it. The associations between aspect choice and the value of the contrast are reliable (and predictable) at different degrees, so we may distinguish core and peripheral (or stronger and weaker) conditions (or factors). Concomitantly, there is no general rule saying that a particular morpheme indicates pfv. or ipfv. aspect as such. Thus, the aspect value is a factor that should be accounted for not only as a distinct element of constructions, but it can be spelt out in templates, which I take to be sets of properties ordered by levels, or components. This distinguishes templates from constructions, or schemas, which are primarily characterized by their syntagmatic "outfit" and which normally lack a complex structure of levels (see the representation in (19) and the correspondence rules above). By contrast, the templates which we need comprise up to five components:

1. aspect (pfv vs ipfv. stem),

2. grammatical form of the stem (i.e. whatever may be added on the stem: markers of tense and agreement, or non-finiteness),

3. other markers (e.g., negation, auxiliaries, temporal adverbials),

4. actionality and reference (i.e. functions constituting the core of any aspect opposition, incl. event-external pluractionality and temporal definiteness a.k.a. episodicity),

5. pragmatic function (e.g., illocutionary purpose, presupposition management).

Components (i) and (ii) are indispensable, since they are always specified morphologically (as any verb form in Slavic). Components (iv) and (v) are also indispensable, but only in the sense that these properties are inherent to any utterance,

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even without explicit specification. Elements of component (iii), in turn, are optional. Simultaneously, (ii) and (iii) represent distinct linguistic material (as units on word and subword level) which interfere with aspect (as inherent to the stem) on a syntagmatic axis; (ii) and (iii) can specify parts of larger constructions (on predication or clause level) accessible for a description in CG terms or for correspondence rules in a WP fashion. The other components are non-distinct and, in this respect, abstract. After all, each of the components itself implies paradigmatic contrasts (between forms or functions), but the assignment of aspect, i.e. (i), provides the basic binary paradigmatic distinction.[23] In this sense, aspect choice is like a pivot, since in combination with the other components it participates in the formation of minimal pair contexts (part of which was illustrated in Section 2).

A template can be created for each categorial distinction for which aspect choice is a sufficiently reliable indicator, or by which it is restricted; the other factors which also contribute to this distinction (or condition the restriction) are spelt out in components (ii-v). The "nature" of the categorial distinction is used as a label of the template (maybe together with the language or subdivision of Slavic to which it applies); it is, as it were, the minimal common denominator for the contrast conditioning aspect choice. The symbol '—' means that no specification is required, properties in round brackets are optional, additional information is given in square brackets.

An illustration of a relatively simple template would be the formation of the future tense of ipfv. and pfv. stems in North Slavic; see Table 2.

Table 2: Future in North Slavic

(i) IPFV	(i) PFV
(ii) infinitive [or *l*-form in Polish]	(ii) non-past stem + non-past endings
(iii) вọD- [auxiliary]	(iii) — [auxiliaries excluded]
(iv) —	(iv) —
(v) —	(v) —

Here, aspect choice bears on the choice of grammatical forms and their interpretation, regardless of which functions might be associated to pfv. and ipfv. future; that is why (iv) and (v) are left unspecified.

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[23]For this reason no additional level has to be assumed (contrary to what one of the reviewers suggested): by the choice of ipfv. or pfv. aspect the opposition to the other aspect (= grammatical class) is determined *ipso facto* (*tertium non datur*). See also the peg-metaphor below.

For South Slavic the situation changes insofar as non-past pfv. stems do not yield a default future reading. Instead, a distinct future marker (Bulg. *šte*, Mac. *ḱe*, inflected Srb.-Cr. *ću* and Sln. *bom*) combines with either aspect and the non-past of pfv. stems is tightly associated with irrealis functions (first of all habitual, modal, conditional); it must be combined with distinct irrealis markers, among which for most of these languages *da* is the predominant one.[24] For South Slavic non-past pfv. stems we thus get a template as in Table 3.

Table 3: Non-Past in South Slavic

(i) IPFV	(i) PFV
(ii) non-past stem + non-past endings	(ii) non-past stem + non-past endings
(iii) —	(iii) IRREALIS [e.g., *da*]
(iv) —	(iv) suspension of assertivity
['non-actual present']	
(v) —	(v) —

Another minimal pair contrast, widespread all over Slavic, is aspect in the imperative +/− negation. See (9a)-(9b), adduced in Section 2.1 and repeated here as (27), and the corresponding template in Table 4.

(27) Russian

    a. **Ne rasskaži** [PFV] emu (slučajno), čto ty videl.
        '**Don't tell** him (inadvertently), what you have seen.'

    b. Nu, čto ty tam videl? (Ty obeščal mne rasskazat' [PFV].)
        Rasskazyvaj! [IPFV]
        'Well, what have you seen there? (You promised to tell me.) **Tell** me.'

For the ipfv. imperative (with negation) the referential condition is given in brackets because prohibitives do not imply the exertion of social force for single occasions; they can be (and often are) uttered as a general command (e.g., *Don't eat with your fingers*). However, provided the directive speech act refers to a single situation (with a concrete illocutionary concern), pfv. and ipfv. stem are

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[24]Alternatively, one might say that future belongs to the irrealis domain and that, correspondingly, the future morpheme itself marks irrealis. The consequence would be that South Slavic does not have future marking, or that future is but a standard (or generalized) implicature of non-past + the respective irrealis marker. This, however, would not change anything essential in the template Table 3.

Table 4: Directive speech acts

(i) IPFV	(i) PFV
(ii) imperative	(ii) imperative
(iii) negation	(iii) no negation
(iv) (single instance)	(iv) single instance
(v) directive and deontic: prohibition [addressee is assumed to have control over	
event denoted by the verb]	(v) directive and deontic: order, command,
request, etc. [addressee is assumed to have	
control over event denoted by the verb]	

in an ideal paradigmatic replacement condition, and this applies to virtually all Slavic languages: the illocutionary background (a deontically, i.e. socially motivated directive speech act) does not change, only negation makes the difference and "switches" the aspect.

A complication arises inasmuch as the negated ipfv. imperative is used for other purposes as well (see Section 2.2). A similar point holds for unnegated ipfv. imperatives which, among other grammatical forms of unnegated ipfv. stems, are employed to signal that the speaker assumes the relevant action to be presupposed (also by the interlocutor). Other grammatical contexts without negation in which ipfv. stems are associated with this discourse function are modals (compare ex. (11a)-(11b)) or the future tense. Slavic languages obviously differ as for the prominence of this function, but it anyway often interferes with other functions associated with ipfv. aspect. An analogous point concerns event-external pluractionality, in particular the denotation of unrestricted repetition, which systematically conflicts with actional defaults and the limiting function of the pfv. aspect.[25]

Furthermore, as templates like Table 3 show, one of the two aspects may not require any further specification, i.e. its use is rather unrestricted, while the other aspect is subject to quite severe restrictions. Such an asymmetry holds true also

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[25]This conditions an inner-Slavic differentiation of the factor hierarchy relevant for aspect choice (cf. Dickey 2000: Section 3, Wiemer 2008: 399-403, among others).

for more complex cases, as with negated imperatives in which the employment of pfv. stems requires very specific conditions (which, in addition, may be more salient only for a particular subarea of Slavic) that are not visible just "on the surface" (see Wiemer, submitted). In other clear cases of asymmetry one of the aspects is altogether blocked, not because of some specific (and shaky) context conditions, but for a more straightforward reason. This is the case with aspect in the scope of phasal verbs[26] which, as mentioned in Section 2.2, allow only for ipfv. stems in any Slavic language (except colloquial Upper Sorbian). The template looks, therefore, like Table 4; * symbolizes blocking.

Table 5: Aspect in the scope of phrasal verbs

(i) IPFV	(i) *PFV
(ii) infinitive [North Slavic and Slovene] /	(ii) infinitive [North Slavic and Slovene] /
da + non-past stem + non-past endings [South Slavic]	*da* + non-past stem + non-past endings [South Slavic]
(iii) PHASAL VERB	(iii) PHASAL VERB
(iv) —	(iv) —
(v) —	(v) —

Of course, the blocking of pfv. aspect by phasal verbs is motivated, as the general meaning of pfv. aspect consists in setting limits, and this meaning conflicts with the semantics of phasal verbs. In fact, there is reason to argue that most (if not all) of the functional contrasts and constraints on aspect choice are motivated from the basic categorial distinction between setting (or foregrounding) limits of situations (→ PFV) and backgrounding them (→ IPFV), and only part of the contrasts and constraints can additionally be motivated by telicity.[27]

There is no place (nor need) to continue with illustrations of how templates might look like if we want to capture not only the formal properties of constructions and involved verb forms, but also their functional interpretation for different types of utterances. Hopefully, the general idea has become clear. The crucial point is that every template is based on a choice between pfv. and ipfv. stem; this choice cannot be avoided once verbs are involved, and all properties

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[26]Note that phasal verbs themselves distinguish aspect, i.e. most of them come in pairs, so that their own aspect is indicative of the same functions and constraints as for other verbs.

[27]In other words, telicity provides a condition for subsets of the inventories of functions and constraints associated to ipfv. vs pfv. aspect.

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from (ii) to (v) are "linked" to a pfv. or ipfv. stem (= (i)) like pieces of clothes hanging on pegs, either as unequivocal decisions or as salient tendencies. These pegs (= ipfv. vs pfv. stems) provide the basic paradigmatic contrast, regardless of whether the function (or constraint) concerns (plur)actionality features or bears relevance to temporal deixis (as with the default present > future shift for pfv. stems in North Slavic), or the functional contrast is at best remotely related to these core domains of aspect oppositions.

Conflicts between these factors are unavoidable since the pfv.:ipfv. opposition supplies only a binary choice, and since sense has to be made out of this choice even if actionality or pluractionality features are irrelevant or remain in the background. However, analogous conflicts arise with other binary oppositions and obligatory choices (i.e. if transparadigmatic variability is minimized or lost), such as, for instance, singular-plural distinctions for nouns in most European languages or a definite article, e.g. in Balkan Slavic. The difference, again, is that these categories (and the corresponding paradigmatic contrasts) are not marked by stems (as is Slavic aspect).

The templates are able to integrate correspondence rules (or schemas), if aspect choice reliably hinges on some syntagmatic condition, for instance on some contextual element like *bud-* for the ipfv. future in Russian or Czech, or on an irrealis marker (like *da*) for pfv. present in Balkan Slavic. However, since simple constructional approaches are unable to capture the classificatory properties of Slavic aspect arising from sets of functions and constraints, and since this opposition is morphologically based on different derivational patterns, only templates can do the job of relating the paradigmatic opposition of pfv. vs ipfv. stems to the functional contrasts and grammatical constraints which have been discussed in the literature on Slavic aspect and in a flashlight manner throughout this article.

This said, we can make a step further and reinterpret sets of such templates as members of paradigms of aspect choice. That is, each template, regardless of how complex its internal structure, equals a paradigm cell, but elements of its internal structure are linked to other layers of the overall paradigm. The entire paradigm would then consist of two layers (see Figure 3). Stems (each with its aspect) distinguish gamuts of finite and non-finite forms which make up paradigms in the traditional sense, and these constitute the first layer. Whether one wants to deal only with the set of finite forms, or whether one includes also non-finite forms (and which ones) into the paradigm, is of secondary concern. We may call the smaller set of finite forms 'narrow' or 'classical paradigm', the larger set which includes non-finite forms 'extended paradigm', and we anyway need the latter. The issue of periphrastic forms which fill out cells of traditional paradigms ('analytical inflection'), such as, e.g., the future of ipfv. verbs in North Slavic (person-

number inflected auxiliary *bud-* plus infinitive of ipfv. stem), is of secondary concern, too. The reasons were discussed in Section 4.3
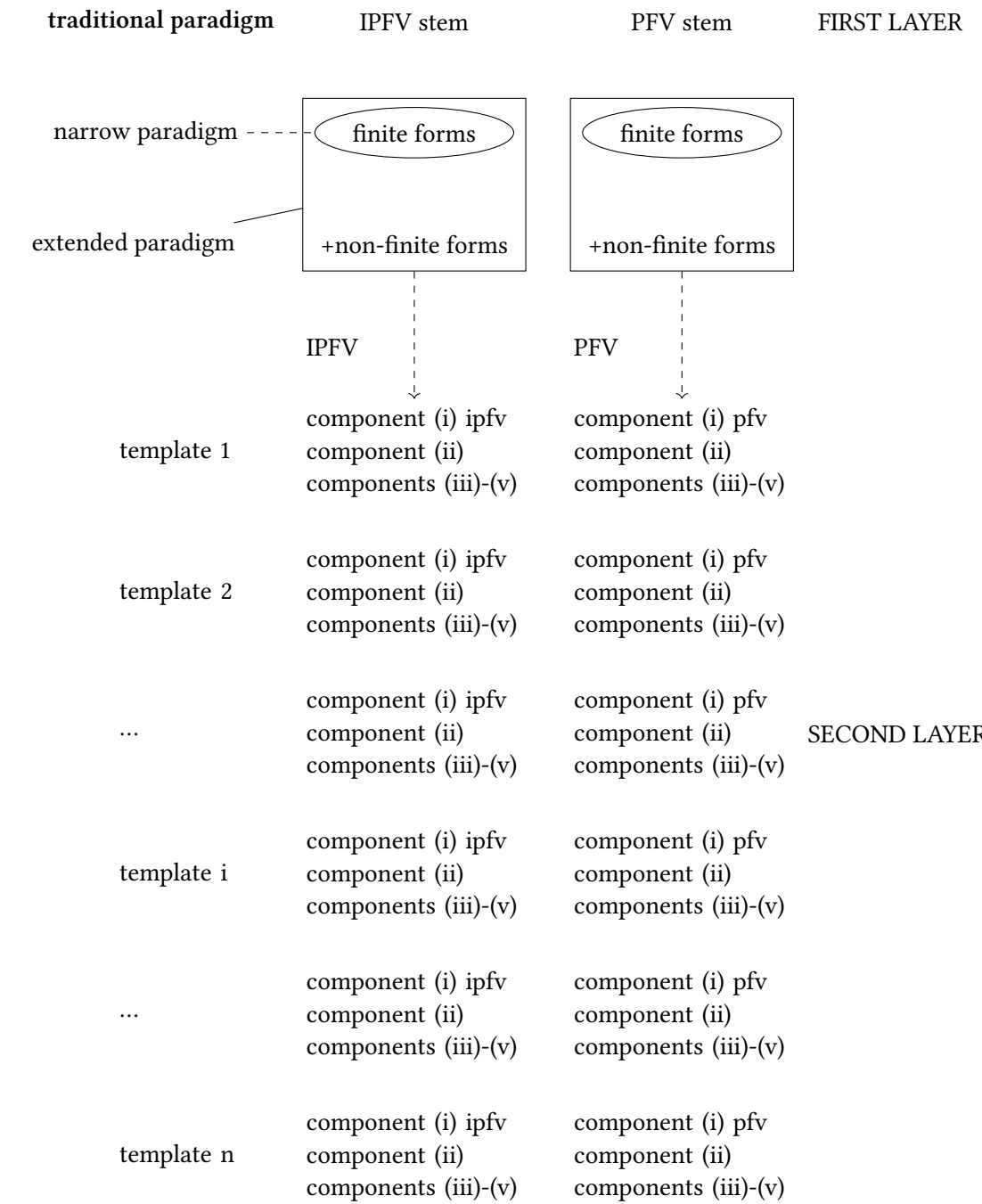
The templates of the type illustrated above provide the second, more abstract layer. Component (i) of each template is the paradigmatic opposition between ipfv. and pfv. stem itself, i.e. the pegs on which everything hinges. As inherent to stems, it ties together all templates from the same column (= vertical axis). Component (ii) cross-references forms from the extended paradigm (= first layer), it thereby specifies which of these forms are relevant for the given template and, together with component (i), supplies a connection between first and second layer.[28] The basic structure of such a complex, two-layer paradigm is shown in Figure 3. As we saw above, the relation between the pfv. and ipfv. halves of the templates may be asymmetric, either in form-related conditions or in the functional conditions applying to one of the stems in the paradigmatic relation.

Each column *in toto* is opposed to the respective other column, just as, for instance, in a traditional paradigm of inflected nouns singular and plural are opposed for the category number "across" morphological cases and for stems of different gender. Admittedly, this analogy is not perfect since a traditional paradigm of inflected nouns (or verbs) has a closed set of cells, while the number of templates specifying the conditions of aspect choice can be less easily limited; it increases with every grammatically or pragmatically definable contrast for which aspect choice proves relevant. However, the amount of templates hardly constitutes an open class, either, since these contexts cannot increase *ad libitum*; otherwise aspect choice would not be salient and reliable enough. Apart from this, there are other paradigms in "hard core" grammar whose closed character is debatable; consider, for instance, voice-related distinctions, paradigmatic relations between preverbs (e.g., in Germanic or Latvian), or German modal particles (see Section 4.3).

Another objection might be that the templates are not mutually exclusive, as many of them are either interrelated (by common motivation), or they can conflict with one another (see examples above). This makes the inventories of opposed templates dissimilar to cells in traditional paradigms. However, recent work in WP-morphology on traditional paradigms has shown that paradigms are often asymmetric in that their members betray an unequal status, in particular because some of them are better predictors for others (but not vice versa). In general, paradigm members are better characterized as a network (see Section 6). Such network relations can as well be found in the sets of templates and the complex two-layer paradigms of Figure 3. Therefore, the architecture of traditional

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[28]How this might be done technically, should be considered separately.

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traditional paradigm	IPFV stem	PFV stem	FIRST LAYER

narrow paradigm - - - - (finite forms)   (finite forms)

extended paradigm +non-finite forms   +non-finite forms

IPFV   PFV

template 1	component (i) ipfv component (ii) components (iii)-(v)	component (i) pfv component (ii) components (iii)-(v)
template 2	component (i) ipfv component (ii) components (iii)-(v)	component (i) pfv component (ii) components (iii)-(v)
…	component (i) ipfv component (ii) components (iii)-(v)	component (i) pfv component (ii) components (iii)-(v)

SECOND LAYER

template i	component (i) ipfv component (ii) components (iii)-(v)	component (i) pfv component (ii) components (iii)-(v)
…	component (i) ipfv component (ii) components (iii)-(v)	component (i) pfv component (ii) components (iii)-(v)
template n	component (i) ipfv component (ii) components (iii)-(v)	component (i) pfv component (ii) components (iii)-(v)

broken line/arrow = cross-references with element(s) in a component (ii)
of templates

Figure 3: Complex, two-layered paradigms of Slavic verb stems

paradigms and the principles organizing complex two-layer paradigms do not seem that different. After all, it is unavoidable binary choice between pf. and ipfv. aspect which makes this network arise and stabilize.

Now, if such complex, two-layered paradigms can be acknowledged, what follows from this for (morphologically related) stems of opposite aspect which are so closely related in their lexical meaning that they can be considered synonyms? This question arises regardless whether we speak about pairs, triplets or larger groups of stems. Why shouldn't we assume that stems united in this way under one lexical meaning actually share into one (though more complex) paradigm? And if the answer is positive, does this entail that these stems are to be considered representatives of the same lexical unit (= lexeme)? The last question arises because synonyms are usually treated as distinct lexemes, however the synonyms under our consideration are morphologically related and show complementary distribution over grammatically and/or pragmatically defined contexts.

As pointed out in Section 3, the assumed 1:1-relation between lexeme and paradigm has forced many to interpret the different stems as inflection, with diverse artificial and *ad hoc* "solutions". Alternatively, if treated as a classificatory system, each stem can be ascribed its own paradigm, but this alternative is based on the same 1:1-assumption between lexeme and paradigm. Notably, nothing changes with suppletion, since suppletion itself presupposes tight paradigmatic relations and extreme closeness of lexical relatedness. Actually, suppletive aspect pairs force us to acknowledge that the grammatical value (pfv. vs ipfv.) is a property of the stem[29] (cf. Wiemer 2020a: 149f.). Therefore, as concerns stems that are morphologically related and can be considered lexical synonyms, but show complementary grammatical behavior, I do not see any inherent reason why we should not admit for complex, two-layered paradigms composed of the extended traditional paradigms and sets of templates assigned to two related stems. These stems can each be considered separate lexemes which complement each other. Thus, instead of either of the representations given in Figure 2 (see Section 3), we may consider this one:

As for aspect triplets (of either kind discussed in Section 2.1), the only thing we have to admit further is to include a third stem. For the competing pfv. or ipfv. stems we may observe different biases for subsets within combinatorial restrictions and/or the function inventory, i.e. for properties specified in templates.[30]

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[29]As a reviewer remarked, since both WP and CG treat word forms as wholes, they can deal with suppletion, syncretic and analytic forms in the same way. While this is correct, we have to remember that both syncretic and analytic forms, as well as suppletive aspect pairs, presuppose stems. Thus, as far as aspect in Slavic is concerned, stems are more basic than anything else.

[30]Compare, for instance, the usage-based case study in Wiemer et al. forthcoming, which shows
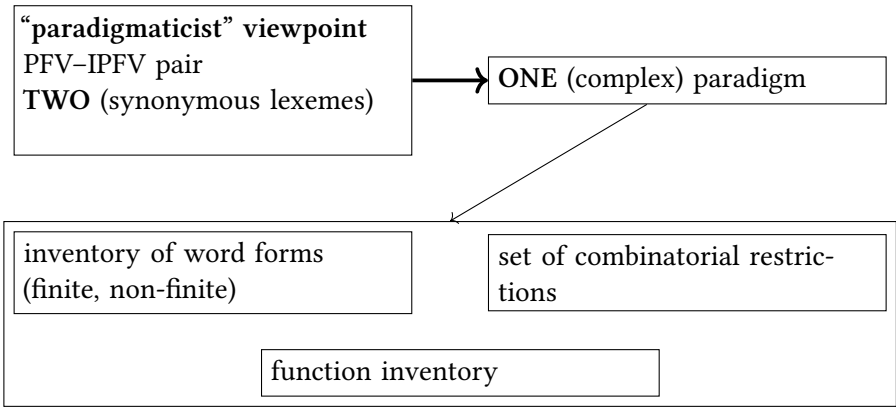
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Figure 4: Alternative view on the grammatical status of aspect pairs

The same reasoning can be extended to actionality groups consisting of stems of either aspect, as argued for by Tatevosov (2016); see Section 2

The assumptions underlying Figure 4 also do justice to the classificatory character of the PFV.:IPFV. opposition. Simply those verbs for which no morphologically related stem with a close enough lexical meaning exists (*perfectiva* and *imperfectiva tantum*), certain parts of the paradigm, defined via word forms (= traditional paradigms), constraints and functions are absent. This can be compared to analogous cases, for instance to *pluralia* and *singularia tantum* (or nouns with a strong bias to either singular or plural in non-arithmetic contexts) in relation to the values of number in nouns, or with the paradigms of verbs that do not passivize in a language with an otherwise fully developed distinction between active and passive voice. Like inventories of word forms, function inventories and sets of combinatorial restrictions (i.e. the "ingredients" of templates) are defined for a maximum range of pfv. and ipfv. stems, but they do not (and cannot) apply to every single representative of these classes; rather they are like repositories supplying admissible functions for these representatives.

One final question, alluded to above, remains. The templates which constitute the second layer of the complex paradigms can be listed; but is there some internal order between them? In particular, can some templates be regarded as more important inasmuch as they serve as predictors for other templates? Similar key functions of members in paradigms have attracted attention particularly in most

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that Pol. *dzielić*[IPFV1] and *rozdzielać* IPFV2 (pfv. *rozdzielić*) and their Czech cognates *dělit*[IPFV1] and *rozdělovat*[IPFV2] (pfv. *rozdělit*) 'divide, separate' have different preferences for stative (IPFV1) vs habitual (IPFV2) contexts.

recent implicational varieties of WP (see Section 4.2). It would be instructive to learn whether there exist implicational relations between templates relevant for aspect choice that parallel (or are analogous to) such asymmetries in traditional paradigms, or between constructions that are organized more tightly in paradigmatic terms.[31]

In fact, some templates relevant for aspect choice are certainly more important, either because the functions and/or constraints which they capture are more frequently encountered and less restricted by lexical meaning (e.g., most pluractional meanings are rather insensitive to actionality properties, including telicity), or because they are more firmly associated with their context conditions (e.g., with communicative intentions) or more difficult to suppress by conflicting conditions than constraints and/or functions specified by other templates. These constraints and functions would play a more central role in the grammar. However, relations between them are often hard to pin down, let alone to quantify. Of course, we may start from certain "hard core" constraints like, for instance, the compulsory use of ipfv. stems instead of pfv. counterparts in the narrative present tense in East Slavic and Polish, in contrast to, e.g., Czech or Slovene (see Section 2.2). But then the problem is whether such factors of aspect choice correlate with others like, for instance, the restriction of the 'inchoative' future (with BǪD-) to ipfv. stems (typical of all North Slavic languages), or functional contrasts of aspect choice in the scope of modals (which show an overlay of different contrasts that can easily conflict with each other). Finally, even if we can disclose sufficiently robust correlations, the question arises in which direction the implication goes (or whether it is bidirectional).

These questions are intriguing also for the reason that implicational relations between members of traditional paradigms seem to be arbitrary in the sense that no semantic motivation can be found; they usually just serve as an internal principle of the organization of paradigms,[32] possibly conditioned by the reduction of conditional entropy (Milin et al. 2009, Blevins 2016: 7). Conditional entropy is connected to expectability which ensues from the relation between frequency patterns of paradigm members. Even if some day we might be able to describe conditional entropy for factors that influence aspect choice and can be captured by templates, we would certainly expect these factors to be related by semantic motivation (including communicative purposes). Therefore, contrary to asymmetries between cells of traditional paradigms, asymmetric relations between

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[31]I am unaware of any attempt in CG to disclose implicational hierarchies, or asymmetries, among constructions (apart from standard assumptions about inheritance relations; see Section 4.1).

[32]cf. Haspelmath & Sims (2010: 172-174) on Prinscianic formations.

templates describing conditions of aspect choice are obviously of a different nature.

This brings us to our conclusions.

6 Conclusions and outlook

The proposal made in Section 5 amounts to extending recent reasoning in implicational WP models to the properties of a stem-derivational aspect system. As shown in Section 2, productive stem derivation is only the morphological prerequisite for the formation of the Slavic PFV.:IPFV. opposition as a classificatory category. Basically, extending WP-reasoning to this case amounts to a transfer of paradigmatic order from the word level to the level of templates for constraints and functional oppositions connected to the choice of morphologically related stems. Blevins (2016: 75) states:

> Treating paradigms as fundamental units of grammatical organization conveys the same kinds of advantages as treating words as the basic grammatical signs. Just as words may have properties that cannot be assigned to their parts, sets of words may express information that cannot be associated with individual words.

The analogy with Slavic aspect becomes clear if, in this quote, we replace *words* by *stems* and add that also sets of templates may express information that cannot be associated with individual stems. This is obvious particularly for stems of opposite aspect than can be organized in pairs, triplets or actionality groups, since they are able to function as synonyms for different grammatical and communicative purposes, and the patterns of their morphological relatedness are regular to an extent that they can serve as a basis for analogical transfer between stems with less transparent and/or obsolete morphological ties.

The analogy with WP-models becomes even more straightforward with the next quote from Blevins (2016: 80), which is about the formation of conjugations and declinations conceived of as classes:

> In the same way that stems are not basic units in a classical WP model, but are instead abstracted from a set of forms, classes [of conjugations or declinations; BW] are not 'properties' of items but are abstractions over sets of paradigms that exhibit congruent patterns of form variation. The class of an item is exhibited via characteristic patterns of form alternation.

Here it suffices to admit that stems may be the basic units conveying grammatical information (i.e. pfv. vs ipfv. aspect) and to rephrase as follows: classes of pfv. and ipfv. stems are not properties of particular stems but are abstractions over sets of templates that exhibit congruent (i.e. consistent and predictable) patterns of mutual replacement for stems of the opposite aspect. The class to which a stem belongs is exhibited via characteristic patterns (or: sets) of templates which capture constraints and functions.

This amounts to saying that classes which constitute pfv. and ipfv. aspect in Slavic are more abstract, but also more important, than conjugational or declensional classes. Although the latter are of a rather formal nature, their interference with various levels of grammar and pragmatically motivated distinctions on utterance level is considerably lower (or even absent) in comparison to the far-reaching consequences that follow from the choice of a pfv. or ipfv. stem in Slavic languages. Inflectional paradigms represent an extreme case of predictive patterns, but they also represent a simple (probably the simplest) case of such patterns. Paradigms provide speakers with a "maximally reliable analogical base for deducing new forms based on previously encountered forms" (Blevins 2016: 12). While this applies to productive derivational morphology as well, this kind of analogical base would concern only the morphological prerequisite, so to say: the stem-derivational mechanism which is necessary, but not sufficient to explain the architecture of Slavic aspect. The analogy supplied in this case relates not simply to new forms, but to a fundamental paradigmatic contrast based on the class membership of verb stems to pfv. or ipfv. aspect, as argued for throughout this article.

Furthermore, Blevins doubts that WP approaches are suitable to deal with derivational morphology. He argues that at least more traditional realizational models "are less applicable to the variable structure exhibited by 'families' of derivational forms" (Blevins 2016: 159). His argument primarily relates to word-class changing derivation (e.g., verb ⇒ agent noun), which usually does not allow for the delimitation of "a finite set of forms within a uniform feature space". Moreover:

> Given a list of derivational processes active in a language, it is of course possible to assign a uniform family of 'potential' forms to all of the members of a word class. Yet the uniformity achieved is deceptive, because it collapses a **critical distinction between those forms that are established in a language and those that are merely possible in principle**. (Blevins 2016: 159, emphasis added)

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First of all, the caveat expressed here would be justified equally well for many complex inflectional systems, especially if periphrastic forms ('analytic inflection') are accounted for. Consider, for instance, the complex verbal paradigms of Bulgarian, the Kartvelian languages, French, or even English. So there is no real difference between productive inflection and productive derivation (however one may wish to draw the line), and this can be maintained all the more for derivation which does not change the syntactic class, as is the case of Slavic aspect.

More importantly, implicit to Blevins' point, highlighted in the last quote, is a main bone of contention between word-based ('abstractive') and morpheme-based ('constructive') morphology, namely the rule-versus-list fallacy: "the unwarranted assumption that linguistic constructs are either generated by rule or listed" (Booij 2010: 4, with reference to Langacker 1987). Why should we not assume that human beings are capable of doing both: to store some ready-made units in their memory and to apply rules by which more complex units are composed "on the fly" from less complex ones? CG attempts to integrate regular and transparent constructs into a 'constructicon' of a given language, on condition that they are sufficiently frequent (see Section 4.1). In general, researchers appear to be quite unanimous that, on the one hand, units (of different formats, i.e. on word, sub-word and multi-word level) are probably stored because they are more frequently encountered and easy to isolate from their immediate syntagmatic environment. On the other hand, without the productive, *ad hoc*-application of rules it would be difficult to understand how new complex forms (among them many hapax formations) can arise, apart from the fact that postulating myriads of complex linguistic constructs to be stored in memory (= lexicon) is not only uneconomic in linguistic description, but seems to be inadequate from a psychological perspective.

Therefore, the problem pointed out by Blevins is justified, but it rather begs the question of how to achieve an adequate equilibrium between potential and ready-made forms in one's model of linguistic activity. This includes the question whether a lexicon may consist of both words and morphemes. Haspelmath & Sims (2010: 70-74) give convincing arguments in favor of a 'moderate word-based model', which combines words and morphemes, although the former are given primacy over the latter. In practice, a similar consequence follows from Goldberg's (2006) definition of constructions (see Section 4.1), according to which a "mixture" of idiomatic (non-compositional) forms and of some (frequent) complex forms is regarded to be stored in the lexicon. Experience with Slavic aspect may add to this discussion crucial insights. First, the basic unit on which Slavic

aspect operates is verb stems,[33] i.e. units of a format intermediate between words and morphemes. However, by far not all stems occurring in real discourse are registered in dictionaries, instead many are certainly not stored as ready-made units in speakers' memories, but construed on the spot, often remaining ephemeral. We would thus need a 'moderate stem-based model' which basically follows the assumptions of WP approaches, but constructivist elements are to be included inasmuch as we are dealing with sufficiently transparent morphology (e.g., with productive suffixes employed to derive ipfv. stems) and sufficiently obvious rules of concatenation. However, since we observe systematic morphophonological alternations not only in the relation between non-past and infinitive stems, but also between related pfv. and ipfv. stems, the rule-based part of our model should be rather of an IP- than of an IA-type (see Section 2).

Therefore, following Blevins (2016), paradigms can be conceived of as limiting cases of network relations in which certain members show some predictive value for other members of the network. In Slavic aspect the morphological form of these members can be predicted only to some extent, and we always have to consider patterns of derivation against lexical closeness (this concerns particularly the role of prefixes added to ipfv. simplex stems). However, the sets of constraints and functions characteristic of each aspect lead to paradigmatically tight oppositions with regard to classes, hard constraints are predictable from the interaction with other grammatical categories (e.g., tense), and the selection of functions by specific representatives of a class can be predicted with a certain reliability on the basis of the actionality class of the stem and an account of (sometimes complex) conditions of the current discourse.

To conclude, it is one issue whether CG- or WP-approaches get interested in pursuing on the path proposed here, and thereby try to integrate the lesson told by the architecture of Slavic grammatical aspect. This would demand an application of paradigmatic structure on a more abstract and complex level than even in recent implicational WP-models, which basically have remained restricted to inflectional paradigms. This understanding of abstract paradigm structure also reaches beyond CG-approaches to paradigmatic structure, mainly defined via inheritance relations between different levels of complexity that is measurable in terms of elements belonging to a schema. Moreover, obligatoriness – as the opposite of high transparadigmatic variability – for Slavic aspect arises on a different basis than it does in word-based or construction-based descriptions.

Regardless of whether such an extension of paradigm structure will be accepted in the mentioned theoretical frameworks, a complementary issue should

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[33]Rather infrequently, stems may coincide with roots.

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be pursued. Namely, we should try to learn more about internal implications between (templates describing) constraints and functions relevant for aspect choice. Such an examination would greatly increase our understanding of the architecture of this category in Slavic, and probably of classificatory categories in general. For this purpose, it is worth considering whether and how conditional entropy between different factors relevant for choice aspect might be determined.

Acknowledgements

Abbreviations and symbols in glosses and other examples

⇒, ⇐	direction of morphological derivation	PFV	perfective
		PFX	prefix
		PL	plural
1, 2, 3	first, second, third person	PRS	present
		PST	past
F	feminine	SG	singular
FUT	future	SFX	suffix
INF	infinitive	THV	thematic vowel
IPFV	imperfective	VIR	virile
M	masculine		

Languages:

Bel. – Belarusian, Bulg. – Bulgarian, Cr. – Croatian, Pol. – Polish, Russ. – Russian, Srb. – Serbian

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Corpus

PNC: Polish National Corpus: http://nkjp.pl/
RNC: Russian National Corpus: https://ruscorpora.ru/new/

Chapter 5

Recursion and Paradigms

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This paper sketches the current status of morphology and paradigms in linguistic theorising. In particular, it is shown that from a constructionist as well as from a compositional perspective, morphology including paradigms tends to dissolve. The former might be less obvious; however the paper argues that a constructional deconstruction of paradigms and morphology follows directly from Haspelmath (2011) take on Booij (2010) and related approaches in the realm of Construction Morphology (CxM). The latter is more obvious; in particular, proponents of Distributed Morphology (DM) regularly emphasise that morphology is but an interface and paradigms are epiphenomenal. Throughout the paper I assume some familiarity with Construction Morphology and Construction Grammar more generally whereas I introduce DM specifically. However, the paper is not intended as a thorough discussion of the approaches presented (nor do I take sides); rather it is their shared detachment from paradigms that is at stake here. Consequently, also what is sometimes called Autonomous Morphology is addressed in the paper: a rather recent approach that advocates morphology as an irreducible level of description and upholds the paradigm as a format of description in its own right. The balance of the paper is rather pessimistic for morphology and paradigms but eventually I come up with a presumably new argument in favour of regarding paradigms as fundamental: restrictions on inflectional recursion fall out naturally from them.

1 Introduction

In the last decades, morphology as an independent level of description has come under pressure from two sides. In construction-oriented approaches it runs the risk to dissolve somewhere in the middle of the lexicon-syntax continuum: "it's constructions all the way down" (Goldberg 2006: 18). In certain composition-oriented approaches, in turn, its traditional tasks have been transferred to syntax:

it's "Syntactic Hierarchical Structure All the Way Down" (Harley & Noyer 1999: 3). The last quotation is from Distributed Morphology, which does have *Morphology* in its name but refers to a mere interface between syntax and phonology by this (Halle & Marantz 1993: 114, Bobaljik 2017: 1).

Together with morphology, a certain format of description appears to be discarded, which has been central to at least what is traditionally termed inflectional morphology:[1] the paradigm. Throughout this paper, *paradigm* is to be understood in the following sense, unless noted otherwise:

> [...] a set of CELLS; each such cell is the pairing of a word form with the set of morphosyntactic properties which that word form realizes. (Stump 2002: 147)

I consider this definition quite general, since, in principle, it does not exclude an incremental instead of a realisational approach (for an overview of morphological theories cf. Stewart (2016): after completion, the string can be regarded as a whole. Please note, however, that the definition given here differs from Politt (2019) contemporary concept of paradigm in two respects. First, it is narrower in that it refers to merely word forms (the notion of word is a point to be discussed below); second it is broader in that it does not take a stance on whether paradigms are part of native speaker knowledge (another point to be discussed below).

To give an impression of how the discussion in the present paper is going to proceed, I pick out two quotations from the literature, which coincide in rendering paradigms superfluous eventually. First, consider Haspelmath (2011) on constructions:

> Clearly, the form–meaning relationship is often straightforward and compositional, but it is also often more complex. For the latter cases, morphologists have used paradigms and realization-based rules, and syntacticians have used constructional idioms. The similarity between realization-based morphology and construction-based syntax has recently been emphasized especially by Gurevich (2006) and Booij (2010). As far as I have been able

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[1]This is the kind of morphology on which the present paper focuses; however, most points before Section 4. carry over, mutatis mutandis, to derivational morphology: word formation can be modelled using paradigms (Hathout & Namer 2019) but it can probably be modelled just as well using constructions or rules, including special rules. On a related note, let me add a word on terminology: in the present paper, the root *deriv-* is sometimes used meaning 'related to the formation of new words' and sometimes used meaning 'related to composition' (especially when presenting DM); I assume that in each case the context suffices for disambiguation.

to determine, the differences between them mostly derive from different traditions, not from any substantive differences. (Haspelmath 2011: 59)

I conclude from this quotation that paradigms can be rewritten as constructions. Incidentally, the reverse is also true, provided that the definition of paradigm is relaxed to include all sorts of paradigmatic relations in a structuralist sense: imagine a micro-paradigm like *be all ears* vs. *be all eyes*. However, from a constructionist perspective, constructions are needed anyway, so it is the paradigm that one can do without. In practice, the rewriting of paradigms as constructions can be thought of as conceptualising every single cell from a paradigm as the small semiotic entity that it is. For example, Table 1 from German can be rewritten in the manner of Figure 1.

Table 1: present indicative of German sein 'be'

	singular	**plural**
1st **person**	bin	sind
2nd **person**	bist	seid
3rd **person**	ist	sind
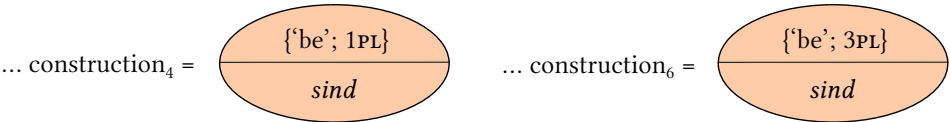
Figure 1: Constructions instead of a paradigm

The rewriting can also be accomplished in a less space-consuming way (cf. Section 2.1.); however I use a partly Saussurean way of presentation here in order to highlight the fact that every cell is a sign. Needless to say, these signs (= constructions) may form networks among themselves, which in turn might equal paradigms. Crucially however, paradigms are no more than emergent from this perspective.

This coincides surprisingly well with the view on paradigms following from an otherwise very different theoretical perspective, i.e. from the perspective of Distributed Morphology (henceforth referred to as *DM*). Consider the following footnote in a recent paper.

[...], we use paradigms only for representational issues. As is well-known, in DM, paradigms are epiphenomenal. [...] (Pomino & Remberger 2019: 473)

Thus, paradigms are not rejected as such but they are rejected as parts of mental grammar (which is the only area of interest in DM). The most detailed argument to that effect might be found in Bobaljik (2002). More recently, David Embick (2015) even managed to write a book-long introduction to DM without even using the term *paradigm*(*atic*) beyond the bibliography and one footnote (Embick 2015: 232). These researchers' view on paradigms derives directly from the architecture of grammar assumed in DM, which will be laid out in §Section 2.2. of the present paper.

Summarizing for now, the theoretical significance of paradigms may be seriously called into question from otherwise very different theoretical perspectives. The present contribution aims to portray these positions in some depth (Section 2), explore a common defence strategy applied by Autonomous Morphology (Section 3), and eventually come up with one task in linguistic theorising that only paradigms appear to fulfil directly, i.e. delimiting recursion (Section 4). Hence, the key term *recursion* will not reappear until the last section.

2 No morphology, no paradigms

2.1 From a construction-oriented perspective

If the introductory example had not been from German but from Turkish or another language with considerably less fusion and suppletion than German (Aikhenvald & Dixon 2017: 4, Dressler 1985: 334 but also cf. Bacanlı 2011), both the paradigmatic as well as the constructional notation would have displayed forms that are systematically segmentable to a large extent. So the question arises whether such forms should be described by rules rather than by paradigms or constructions. The present section aims at answering this question from a constructionist perspective. To anticipate the answer, compositional word forms are to be described by constructions like compositional syntax is to be described by constructions.

For a start, consider the Turkish example to which Haspelmath (2011: 59) alludes, stemming from Hankamer (1989: 403): one Turkish verb root yields 1,830,248 different forms when counting (what would traditionally be called) inflection and (what would traditionally be called) derivation, not even allowing for iterations. Obviously, this is too much to write down in paradigms. And things get worse when iterations are eventually taken into account. (1) provides an example.

(1) Turkish (Hankamer 1989: 396, emphasis added)

a. daya   -n -ış **-tır** **-t** -ıl -a -mı -yabil -ecek -ti -k
prop_up RFL RCP **CAUS CAUS** PASS POT1 NEG POT2 ASP TNS AGR[2]
'we might not have been able to be made to make someone else practice mutual aid'

When, starting from (1), one tries to imagine all other possible combinations of affixes, this example gives an impression of the enormous size and systematicity any Turkish verbal paradigm would have. So using paradigms just does not seem to make sense for Turkish verbs.[3] Are things different when counting exclusively inflection? Yes and no. Yes, when only counting those forms that are usually considered inflectional in the language (i.e. those expressing aspect, tense, passive, mood, agreement, and negation) then the total number amounts to 576 (Kornfilt 1997, my count), which does exceed the number for, e.g., Latin easily (up to 120, Matthews 1972: 396, my count) but still seems to be manageable. No, writing down the (reduced) paradigm still appears to be pointless as the realization of the cells is largely predictable, quite different from the situation in Latin. As an example, consider the future and past forms of Turkish *yapmak* 'do' in Table 2.

Table 2: future and past forms of Turkish yapmak 'do' (Kornfilt 1997, ch. 2.1.3)

	1SG	**2SG**	**3SG**	**1PL**	**2PL**	**3PL**
FUT	yap-acağ -ım	yap-acak -sın	yap-acak	yap-acağ -ız	yap-acak-sınız	yap-acak-lar
PST	yap-tı-m	yap-tı-n	yap-tı	yap-tı-k	yap-tı-nız	yap-tı-lar

The root (*yap*) stays the same throughout, the tense suffixes (*-AcAK* and *-DI* respectively) merely undergo phonological alternations,[4] and the agreement suf-

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[2]Abbreviations (in order of occurrence): RFL – reflexive, RCP – reciprocal, CAUS – causative, PASS – passive, POT1 – first potential, NEG – negation, POT2 – second potential, ASP – aspect, TNS – tense, AGR – agreement.

[3]The same holds for other categories in the language. For example, when Kornfilt (1997: 311-320) presents demonstrative and interrogative pronouns, she does spell out quite a few paradigms but only in order to illustrate the high degree of systematicity with which the pronominal items are followed by separate suffixes for number and case.

[4]In particular, note that the change from <k> to <ğ>, i.e. from [k] to Ø (with a lengthening of the previous vowel), appears to be purely phonologically conditioned (Ketrez 2012: 13–14, 91).

fixes are clearly separable. In fact, the paradigm above may be replaced by two simple instructions, cf. (2).

(2)   Turkish

    a. {root; TNS:FUT} ⟹ root-*AcAK*-AGR1
    b. {root; TNS:PST} ⟹ root-*DI*-AGR2

Read: for expressing (an instantiation of) the meaning on the left hand side in Turkish, use (an instantiation of) the form on the right hand side. The manner of notation is equivalent to the graphical way of representation in Figure 1. Note that the instructions can be read as either rules or constructions, which is, in fact, not a contradiction (Rostila 2011: 123-124). However, since I am portraying constructionist thinking here, the natural choice is for constructions.

Admittedly, the existence of more than one set of agreement forms in Turkish introduces some irregularity into the picture, especially since, in total, four such sets are posited (Kornfilt 1997: 382). Kornfilt refers to these sets as paradigms; in fact, this is one of the few places in the book where she uses the term at all. Although this usage is not in line with the definition adopted in the present paper – where paradigms are not about morphemes but about whole word forms – it already indicates that the purview of what we call paradigms is the moderately irregular. This becomes more tangible when we shift from Turkish to Latin. Consider Table 3, which is an (approximate) translation of Table 2.

Table 3: future and past ("perfect") forms of Latin *facere* 'do' (Panhuis 2009: ch. 7)

	1SG	2SG	3SG	1PL	2PL	3PL
FUT	faciam	facies	faciet	faciemus	facietis	facient
PST	feci	fecisti	fecit	fecimus	fecistis	fecerunt

Instead of two clearly distinguished tense suffixes we find merely one (*-e* in the future) plus a root vowel change between the two tenses (*fac-* > *fec-*). Moreover, the future marker *-e* becomes *-a* in the 1st person singular and in all future forms an *-i* slips in between the root and tense. Now, this appears to be exactly the kind of situation for which paradigms have been invented in the first place: they provide an economic way to write down the unpredictable (e.g., the *-i*) coupled directly with the predictable (e.g., 1PL *-mus* but also *f*V*c-*). To this extent, paradigms are a convenient analytical tool and at the same time a concise format for instructed L2-acquisition.

However, paradigms are not the only option. In order to capture the unpredictable as well as the predictable in a very general fashion, Construction Grammarians have long developed other means, i.e. constructions. Crucially, these are not only meant for syntax but for the whole syntax-lexicon continuum, including words and even morphemes (Goldberg 2006: 5). For example, the rules/constructions chosen in (2) above for the Turkish data from Table 2 can be transferred to the Latin data from Table 3, cf. (3).

(3)   Latin

    a. {'do'; PS:1, NUM:SG, TNS:FUT} $\Rightarrow$ *fac-i-a*-AGR1

    b. {'do'; NOT(PS:1 & NUM:SG), TNS:FUT} $\Rightarrow$ *fac-i-e*-AGR1

    c. {'do'; TNS:PST} $\Rightarrow$ *fec*-AGR2

Admittedly, these are three lines for one verb instead of two lines for a whole range of verbs like in (2)). We cannot even generalise from *facere* to all fifth-conjugation verbs, since not all of them show the root-vowel change, e.g., *cupere* 'desire', *fugere* 'flee', *rapere* 'plunder, seize' (Bennett 1918; Greenough et al. 2021).[5] However, in principle, the notation is possible. It is like listing idioms, complete with their schematic parts. In contrast, the same kind of notation for Turkish was more like stating syntactic rules or writing down highly abstract constructions. The crucial point is that the same kind of notation is apt for both types of data.

In this sense, constructions can replace paradigms: paradigms cells *are* constructions. In order to elaborate on this idea, I am going to discuss additional examples in the following paragraphs. Most of the examples are adopted from the literature referenced in Haspelmath (2011: 58-59), i.e. from Spencer (2001), Gurevich (2006), and Booij (2010). Importantly, the first one of these authors, i.e. Andrew Spencer, does uphold the paradigm as a theoretically relevant notion. He belongs to a school of thought which not only holds that there are genuinely morphological phenomena (not reducible to something else, especially syntax) but also maintains that these phenomena can be described best by using paradigms. This school of thought seems to thrive especially within the Surrey Morphology Group and is called *Autonomous Morphology* here.[6] In any case, what Spencer

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[5]Note that the fifth conjugation is also called third-*io* conjugation.

[6]Accordingly, I will call the practitioners *Autonomous Morphologists*, accepting the bracketing paradox. The classic reference is Aronoff (1994); later publications include Maiden et al. (2011). Also Stump's Paradigm Function Morphology belongs here (Stump 2016); however I will not treat this theory in any detail in the present paper since this would require another introduction (in addition to the one to DM).

(2001) presents are, at the same time, realisations of paradigm cells *and* construc-
tions. One of my main aims will be to demonstrate in detail how his examples
can indeed be written down as constructions; a fact, whose further theoretical
consequences will be explored in Section 3. By contrast, Olga Gurevich as well as
Geert Booij explicitly opt for a purely constructionist approach to morphology
with paradigms being merely emergent. As a whole, the following paragraphs
may be read as a fleshing out of Haspelmath's rather brief remarks on the equiv-
alence of realisational morphology and constructionist syntax, partially quoted
above in the introduction (Section 1). Having said this, Haspelmath himself does
not explicitly state that his observations render the traditional paradigm super-
fluous; rather this is the conclusion that I have drawn above (in particular with
respect to the examples from Turkish and Latin) and that I will substantiate in
the course of the following discussion.

First, consider some examples based on Spencer (2001), starting with an ex-
tended version of his example for cumulative exponence.

(4) Spanish (based on Spencer 2001: 285 and Butt et al. 2019: 170-172)

    a. {'sing'; PS:1, NUM:SG, TNS:PRS, MOOD:INDIC} ⇒ *canto*

    b. {'sing'; PS:1, NUM:SG, TNS:PST, MOOD:INDIC} ⇒ *canté*

    c. {'sing'; PS:1, NUM:SG, TNS:PRS, MOOD:SBJV} ⇒ *cante*

    d. {'sing'; PS:1, NUM:SG, TNS:IMPF, MOOD:INDIC} ⇒ *cantaba*

    e. {'sing'; PS:2, NUM:SG, TNS:IMPF, MOOD:INDIC} ⇒ *cantabas*

Here, the predictable part is the structure [*cant-* + X] and the unpredictable
part is whether and how the respective feature values are expressed cumulatively,
i.e. together in one morph. For example, the *-o* in context (4a) *canto* appears to
realise 1st person, singular, present, indicative (and active) all at once, while the
-abas in (4e) *cantabas* might be split into a thematic vowel (*-a-*), an imperfective
past tense marker for the relevant inflectional class (*-ba-*), and an exponent of
agreement (*-s*). So while the latter form seems to be compositional and apt for
a non-constructionist morpheme-by-morpheme description, the former escapes
such a description (provided that we try to avoid null elements). Here, the holis-
tic pairing of form and meaning, i.e. the conception as a construction, presents
itself as the only option as opposed to an incremental approach. Accordingly, the
format of presentation chosen in (4) is simply the same one as in (2)) and ((3)
above: {MEANING} ⇒ FORM.

Since this format is equally apt for forms with a higher degree of composition-
ality (cf. the discussion above), it has been chosen in (4) throughout, even for

(4e) *cantabas*. However, please note that on closer inspection not even this form meets the agglutinating (Turkish-style) ideal: in contrast to the other feature values, indicative mood is not signalled by a dedicated suffix but has to be inferred from the fact that *cant-* belongs to the *-ar* inflectional class, which would have *-e* as its thematic vowel in the present subjunctive. So this, like (4a) above, is a situation we would usually describe by putting the form as a whole into a paradigm cell – while it can be captured equally well by setting up a construction.

Next is Spencer's (2001) example for extended exponence, again written down as a construction here.

(5) Spanish (Spencer 2001: 286)

{'eat'; PS:1, NUM:SG, TNS:IMPF, MOOD:INDIC } ⇒ *comía*

According to Spencer, the feature value imperfective is signalled twice within this word form: by the imperfective marker for verbs of the *-er* inflectional class, i.e. −*i*, as well as by the *-a*, since the latter is a first person singular marker only in the imperfective (provided that the *-a* in the present subjunctive form *coma* is a thematic vowel, not a person/number suffix). This is extended exponence: the marking of one meaning extends over more than one morph. Again, this is a situation that is a) hard to capture by an incremental approach, b) traditionally captured by drawing a paradigm, and c) equally well captured by writing down a construction.

The same is true for Spencer's examples of zero exponence, e.g. (6).

(6) Latvian (Spencer 2001:286, Fennell & Gelsen 1980:542)

    a. {'travel, drive'; PS:2, NUM:SG, TNS:PRS} ⇒ ***brauc***

    b. {'travel, drive'; PS:2, NUM:SG, TNS:PST} ⇒ *brauci*

    c. {'travel, drive'; PS:2, NUM:PL, TNS:PST} ⇒ *braucat*

    d. {'travel, drive'; PS:3, NUM:SG, TNS:PRS} ⇒ ***brauc***

    e. {'travel, drive'; PS:3, NUM:SG, TNS:PST} ⇒ *brauca*

    f. {'travel, drive'; PS:3, NUM:PL, TNS:PRS} ⇒ ***brauc***

    g. {'travel, drive'; IMP} ⇒ ***brauc***

What we see in *brauc* is essentially what we have to expect for any construction due to its nature as a linguistic sign: polysemy. Compare (7) to (8).

(7) *brauc* ⇒ {'travel'; (PS:2OR3, NUM:SG, TNS:PRS) OR (PS:3, NUM:PL, TNS:PRS) OR IMP}

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(8) *drive* ⇒ {'operate a vehicle OR motivate the process'} Batiukova & Rumshisky 2008: 38

To be sure, '[…] 2nd OR 3rd person […]' and 'operate a vehicle OR motivate the process' represent very different kinds of meanings (in constructionist terms: a finite verb represents a partly schematic construction while a lexical entry represents a substantive construction, Hoffmann & Trousdale (2013):2). However, the underspecification in both examples can be neatly captured by writing them down as constructions. So, ironically, a constructionist analysis can do something that also DM strives for (albeit in a different way, cf. Section 2.2.): treating syncretisms[7] as cases of underspecification.

Please note that, strictly speaking, the constructions presented so far are only halves. For being full constructions, they would need a double arrow, signalling that not only the respective meaning triggers the respective form but also the other way round. However, against the background of syncretisms as treated above it is clear that the back arrow would require a more complete picture of the languages at hand than can be given here. For example, after ensuring that through the entire verbal paradigm of Spanish the form *canto* (without stress on the final vowel) is really only 1st person, singular, present, indicative (and active), (4a) could be rewritten as (9).

(9) Spanish (Butt et al. 2019: 170-712)
    {'sing'; PS:1, NUM:SG, TNS:PRS, MOOD:INDIC} ↔ canto

Let me add another word on modes of presentation. When I refrain from adding morpheme boundaries and associating the resulting units with individual meanings I take the following passage from Spencer (2001) seriously.

> […], in a sense it's a mistake to speak of meanings being concentrated in one morph or spread across several morphs or realized by zero morphs. (Spencer 2001: 287)

So in my running text wordings like "the *-o* in context (4) *canto* appears to realise […]" should be taken with a grain of salt: from the constructionist perspective, which I am portraying here, it is not necessarily the *-o*, not even the *-o* in a certain context, but *canto* as a whole that has some meaning to begin with.

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[7]Syncretism = in a given context two feature values are not overtly distinguished although they are overtly distinguished in another context in the same language (adopted from Kramer 2016: 96.

Similarly, if the instructions for Turkish in (2) above are read as constructions, the hyphens indicate what have turned out to be internal semantic entities (probably aligning with internal distributional entities); however neither Autonomous Morphology (based on paradigms) nor Construction Grammar (with emergent paradigms) depends on the presence of any semantic parts below the level of the word form.[8]

Before turning to his main example – auxiliary structures in Slavic – Spencer (2001: 287) mentions a last general group of examples in favour of the realisational approach to morphology: meaningless morphemes. More specifically, he judges Spanish *-ar* to be a case in point: in one class of verbs this element appears after the root in all three, the infinitive, the future, and the conditional. I am not sure whether we are rather dealing with a case of polysemy rather than meaning*less*ness here. However, a more obvious example may be found in the diachrony of German vs. Dutch:

(10) From Middle High German to New High German (Roberge 1985:200–201)
leb**e**te > lebte 'lived'
rett**e**te > *rettte but rett**e**te 'rescued'

(11) From Middle Dutch to Present-Day Dutch (Roberge 1985:200–201)
redd**e**de > reddde 'rescued'

That is, German retains a thematic vowel where Dutch does not – and this vowel does not appear to have any meaning (anymore), not even indicating inflectional class. Admittedly, the *-e-* does distinguish the 3rd person singular past (*rettete*, /retətə/) from the 1st person singular present (*rette*, /ʁɛtətə/ = /ʁɛttə/ = /ʁɛt-tə/ = /ʁɛtə/). However, distinguishing between meanings is not the same thing as having a meaning (recall the classical definition of phonemes vs. morphemes). The only "meaning" that could be assigned to the *-e-* in *rettete* would be 'if you have a choice between a 3rd+past reading and a 1st+present reading, chose the former'. This piece of information does not count as a meaning since, as far as I can see, it is not directly evoked by the *-e-* in native speakers (let alone vice versa). As a result, we get a meaningless element in an otherwise more or less segmentable string, cf. (12).

(12) German
rett-e-te
rescue-?-1/3sg.pst
'rescued'

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[8]This does not only hold for inflection but also for word formation, cf. Booij (2016: 428).

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Thus, again a realisational notation appears to be practical. My point is that such a notation does not intrinsically need paradigms but solely constructions, cf. the construction in (13).

(13) German
{'rescue'; PS:1OR3, NUM:SG, ((TNS:PST, MOOD:INDIC) OR MOOD:IRR)} ↔ rettete

As an aside, from example (7) onwards in this paper, one-to-many relations between form and meaning have been treated as cases of polysemy; however, a constructionist account is even able to distinguish between polysemy and homonymy.[9] Consider Table 1, of which the light shaded cells are presented as a case of polysemy in example (14) and the dark shaded cells are presented as a case of homonymy in (15). The motivation for drawing the distinction is that 1st and 3rd plural share a positive feature value (plural), while 3rd singular and 2nd plural do not; moreover, the former syncretism runs through all verbal forms in German (and extends to the present infinitive) while the latter dissolves in the past tense as well as in the present tense of umlaut verbs.

Table 4: Present indicative of German kaufen 'buy' (Helbig & Buscha 2001: 23)

	singular	plural
1st person	kaufe	kaufen
2nd person	kaufst	kauft
3rd person	kauft	kaufen

(14) German
{'buy'; PS:1OR3, NUM:PL, TNS PRS, MOOD:INDIC} ↔ kaufen

(15) German
    a. {'buy'; PS:3, NUM:SG, TNS:PRS, MOOD:INDIC} ↔ kauft
        AND
    b. {'buy'; PS:2, NUM:PL, TNS:PRS, MOOD:INDIC} ↔ kauft

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[9]Both of which can be special cases of syncretism as defined in the present paper, cf. fn. 7.

To be sure, technically speaking, also the dark shaded cells of Table 4 could be rendered as a case of polysemy, cf. (16).

(16)   German

a.   {'buy'; ((PS:3, NUM:SG) OR (PS:2, NUM:PL)), TNS:PRS, MOOD:INDIC} ↔ kauft

However, as argued above, in the specific case at hand, other facts from the language cast doubt on this latter analysis. So here I would opt for the former analysis in terms of homonymy rather than for the latter in terms of polysemy. In sum, while both analyses make use of underspecification they are apt for different kinds of syncretisms.

Turning now to Spencer's main example, auxiliary structures in Slavic, it seems natural that his realisational treatment of not fully compositional word forms is transferred to not fully compositional strings of words that appear to realise similar meanings (e.g., tenses or aspects). It is especially this generalisation that is picked up by Haspelmath (2011: 59) and, among other issues, contributes to Haspelmath's overall thesis that any universal morphology/syntax boundary is elusive for the time being. Against this background, it will not come as a surprise that also auxiliary structures (or periphrases) may be written down as constructions, so I will not go through this here. However, please note that Section 4. of the present paper will provide a fundamentally different look on such structures.

Summarising my fleshing out of Haspelmath's (2011) reference to Spencer (2001) for the moment, there are reasons to use realisational rules rather than incremental procedures; however it does not seem to matter whether the feature specifications are conceived of as a grid, establishing paradigm cells to be realised, or simply as meanings of constructions (accordingly, the sounds/characters materialise a cell or provide the signifiant of a construction). The notation used in Spencer (2001) is, in fact, similar to the one used above. Going one step further, there is a choice between one representational format that is needed anyway from a constructionist perspective, i.e. the construction, and another representational format that is not needed anyway (though might emerge from applications of the former). Theoretical parsimony requires that we stick to the format needed anyway.

As a last reflection on Spencer (2001) let me note that the author is perfectly aware of the connection between realisational and constructionist approaches. For example, consider the following quotation on auxiliary structures.

We are dealing here with constructional idioms much like phrasal verbs. (Spencer 2001: 283)

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In the same vein, consider the following paragraph, where he compares (inferential-realisational) Word-and-Paradigm models (which, needless to say, he favours) to Item-and-Arrangement models.[10]

> Inferential models can be contrasted with lexical models in which the mapping between form and meaning is specified in the lexical entry of a morpheme. On such a theory, the -*z*-suffix contributes its own [Num:Pl] 'meaning' to the word form by being combined with the (numberless) form *dog*. In this respect, the plural suffix is a Saussurean sign, a pre-compiled pairing of form and meaning. It is precisely that conception that is denied in paradigmatic and inferential-realisational approaches to morphology. Inferential-realisational models by their nature cannot involve lexically listed morphemes-as-signs. As a consequence, inflectional formatives turn out to be simply morphophonological 'markers' on stems, signalling (realising) some subset of the feature set to be expressed, In the simplest cases there is a one:one mapping observable between form and function and the formative then has the appearance of a classical morpheme, but it's important to realise that this is just one extreme of the form-function mapping (and in inflection a rather rare occurrence at that). (Spencer 2001: 280-281)

Note the affinity of this approach to morphology with constructionist approaches to syntax: the primary signifiant is the expression as a whole; its subparts have their function within the expression but they do not necessarily have the same function in other environments as well (cf. the reflection on Spanish theme vowels above). A remaining difference seems to be that inferential-realisational morphology still refers to superordinate rules for realisation, e.g.: if there is no dedicated expression for a given combination of feature values then use the default form (Spencer 2001: 280, 289). As an alternative to such rules, in Construction Grammar there are, however, relationships between constructions (Goldberg 1995: 109). In fact, also realisational rules can be captured by such relationships, e.g.: given a set of meaningful expressions (i.e. constructions) organised in an inheritance hierarchy, use the one that maximally specifies the meaning you want to express (and the maximally specific construction available might turn out to be rather unspecific). Such a conception, including further developments, is run-of-the-mill in Sign-Based Construction Grammar (Boas et al. 2012: 9-14).

In sum, the inspection of Spencer (2001) shows that constructionist thinking is influential in morphology and, from an outside perspective, that constructions

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[10]Item-and-Arrangement (i.e. incremental), Item-and-Process as well as Word-and-Paradigm are families of morphological theories, for their characteristics cf. Stewart (2016).

might even fully replace paradigms. I can be briefer about the two other works mentioned in Haspelmath (2011: 59) and pursued here, i.e. Gurevich (2006) and Booij (2010). For what had to be worked out carefully with regard to Spencer (2001) is utterly explicit in in these works: Construction Grammar applies to morphology just as it applies to syntax.[11] So I confine myself here to a central figure from Gurevich (2006: 170) and an exemplary formula from Booij (2010: 241).

Gurevich (2006) is a book-long treatment of the so called version in Georgian. This is a pre-radical vowel with a whole range of functions, crucially depending on context (Gurevich 2006: 6-13). For example, -*i*- as a pre-radical vowel indicates that the indirect object is affected (in the presence of an overt 1st or 2nd person indirect object) or that the subject is affected as a beneficiary (in the absence of an overt indirect object) or that there is no affected participant (in the passive) or that the subject is 1st/2nd person (in the evidential perfect). In a way, this is a scaling-up of what we saw for thematic vowels in Spanish: a given element in a word form does make a specific contribution to the overall meaning of the word and clause but in order to identify that contribution the hearer has to have information far beyond the element as such.

Now, let's see how Gurevich (2006: 170) combines all these functions of version vowels (of which the example above was but a snippet) into a constructional network. Her presentation is reproduced here as Figure 2.

Syncretisms[12] like the one involving -*i*- can easily be read off the network.

Having addressed syncretisms (as well as other kinds of non-bijective form-meaning relations) several times in the present paper, some standard problems for classical Item-and-Arrangement approaches to morphology are covered. Another standard problem from the wealth of non-bijective form-meaning relations, however, has not been stated explicitly so far, i.e. allomorphy. This is tackled by Booij's (2010) last chapter. For example, he gives the following formula for capturing the ablaut in *sing – sang*:

$$[\text{X i Y}]_{\text{V, [–past]}} \approx [\text{X a Y}]_{\text{V, [+past]}} \text{ (Booij 2010: 241)}$$

Crucially, none of the forms is derived from the other or from some underlying form but they are equally stored in the mental lexicon according to Booij (2010, chapter 10).[13]

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[11]It does become explicit in Spencer (2004: 84): "Essentially, we need to think of inflected words as akin to constructional idioms".

[12]I assume that all of the distinctions are marked overtly elsewhere in the language.

[13]I concentrate on this last chapter since the other chapters are rather on word formation than on inflection whereas the present paper focusses on the latter, to the extent that the difference can be upheld, cf. Haspelmath (2011).
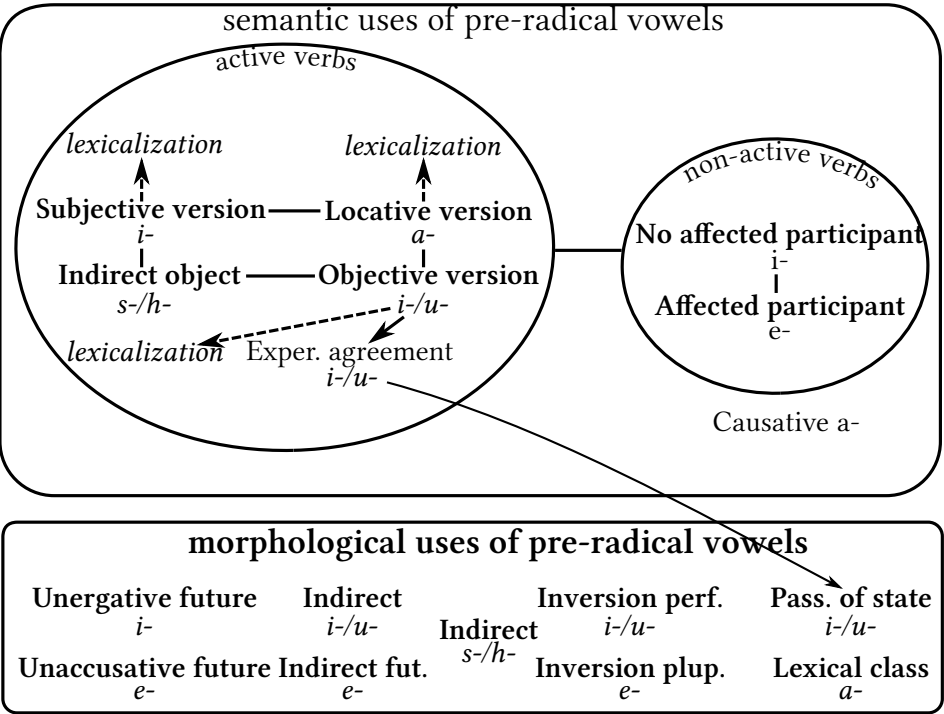
Figure 2: constructional network for Georgian version vowels (Gurevich 2006: 170)

In principle, true suppletion Mel'čuk (1994) may be captured the same way as far as I can see, e.g. for the partial paradigm given in Table 1 (viewed synchronically):

[bi Y]$_{V, [1/2\text{SG}]}$ ≈ [is Z]$_{V, [3\text{SG}]}$ ≈ [sind]$_{V, [1/3\text{PL}]}$ ≈ [sei Z]$_{V, [2\text{PL}]}$,

where Z is the regular agreement suffix and Y is either the regular agreement suffix or something else (Plank 2016: 6-7). Taxonomically speaking, the formula involves four sister constructions (Jackendoff & Audring 2020: 111).[14] The important point about these interconnected constructions is that they can, and do, serve to restate paradigms (Jackendoff & Audring 2020: 151-154). In fact, Jackendoff & Audring (2020) provide a very nice example of what is going on with paradigms in Construction Morphology (CxM): in a first step, they are acknowledged as central to inflection Jackendoff & Audring 2020: 133-134 but in a second step, they are restated, one by one, as interconnected constructions (e.g., Jack-

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[14]Also note the relevance of networks in another recent constructionist approach, i.e. Crysmann & Bonami (2017).

endoff & Audring 2020: 151-154). This is reminiscent of my argumentation above that cells are in fact constructions and paradigms are (specific) relations between constructions.

The extension of Booij (2010) concludes my fleshing-out of Haspelmath 2011: 58-59 remark that, essentially, realisational morphology and constructionist syntax do the same thing. To summarise: against the background of strictly agglutinating languages, certain phenomena familiar from fusional languages (fusion as such, syncretism, allomorphy,…) suddenly appear fairly idiosyncratic – just like against the background of compositional syntax idioms appear quite idiosyncratic. For the latter case Construction Grammarians concluded that we simply had the cart before the horse, i.e. that we have to start conceiving of the whole as primary to its parts – and now their solution is transferred to morphology. For Haspelmath (2011), this expansion of the constructionist idea raises, together with a range of other considerations, the question where to draw the line between the two levels of description generally. In any case, traditional inflectional morphology's favourite format, i.e. the paradigm, seems to be replaceable by constructions, integrated in networks.

We will see in the next section that DM tries to capture exactly the same problematic groups of phenomena but opts for a radically different solution, i.e. the strict separation of meaning and form (at the outset).

2.2 From a composition-oriented perspective

2.2.1 A short introduction to DM

Distributed Morphology (DM) is a strictly compositional approach to morphology, presupposing GB or minimalist syntax. Its origins lie in Halle & Marantz (1993), fairly recent overviews are Embick (2015) and Bobaljik (2017), for a critical review of the former cf. Spencer (2019). The following summary is mainly based on these works; however, occasionally other publications will be referred to as well.

The key feature of DM is not so much the distribution of the morphology as the distribution of the lexicon, which is divided into three lists (Bobaljik 2017: 28). These lists are called A, B, and C below:

1. List A: containing roots, i.e. abstractions over forms, e.g. √BUY, as well as feature values, e.g. plural.

2. List B: containing vocabulary items, i.e. pairings of phonological form and information about where that form may be inserted (Harley & Noyer 1999: 4), e.g. /s/ ↔ [3sɢ] or /baɪ/ ↔ V.

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3. List C: containing non-grammatical concepts connected to the roots in list A (Embick 2015: 209-210), e.g. there is a concept 'get for money' in list C linked to the root √BUY in list A. So the purview of list C is handling the idiosyncratic – even up to idioms. For example, if the aforementioned link does not fit the context, another link can be established like 'accept as true' – √BUY (cf. *I don't buy your conclusion*).

These lists are the cornerstones of a derivational model for inflection and word formation. The derivation starts by selecting items from list A that attach to the terminal nodes of an appropriate syntactic representation, yielding an output like √BUY-3sg. This output is then handed over to list B where matching phonological strings are inserted into the positions, e.g. /baɪ/-/s/. For less straightforward derivations, certain processes directly before or after insertion may be appealed to in addition. One of these options, i.e. impoverishment, will be presented in more detail below. First, let's visualise the basic architecture and say a few more words about the individual steps of the derivation, in particular about vocabulary insertion. For the latter objective it is suitable to pick a language with more agreement than English, so I chose German and the verb *kaufen* 'buy' whose past indicative forms are given in Table 5. Needless to say, the paradigmatic presentation is only for convenience, the forms being represented differently in the visualisation to follow.

Table 5: past indicative of German kaufen 'buy' Helbig & Buscha (2001: 23)

	singular	plural
1st person	kaufte	kauften
2nd person	kauftest	kauftet
3rd person	kaufte	kauften

Now consider Figure 3, where *kauften* {'kaufen', past, 3pl} is derived.[15]

In list A we see several roots, including √KAUF, as well as several feature values, including past, 3rd person, and plural. Crucially, the roots are neither concepts (list C) nor forms (list B). As to the feature values, I have taken the liberty to write them down as such, i.e. [feature:value], whereas it seems more common in DM to write the values only and refer to them as *features*. In any case, this is

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[15]Note that the corresponding present tense example would be more difficult to handle (Spencer 2019: 231).

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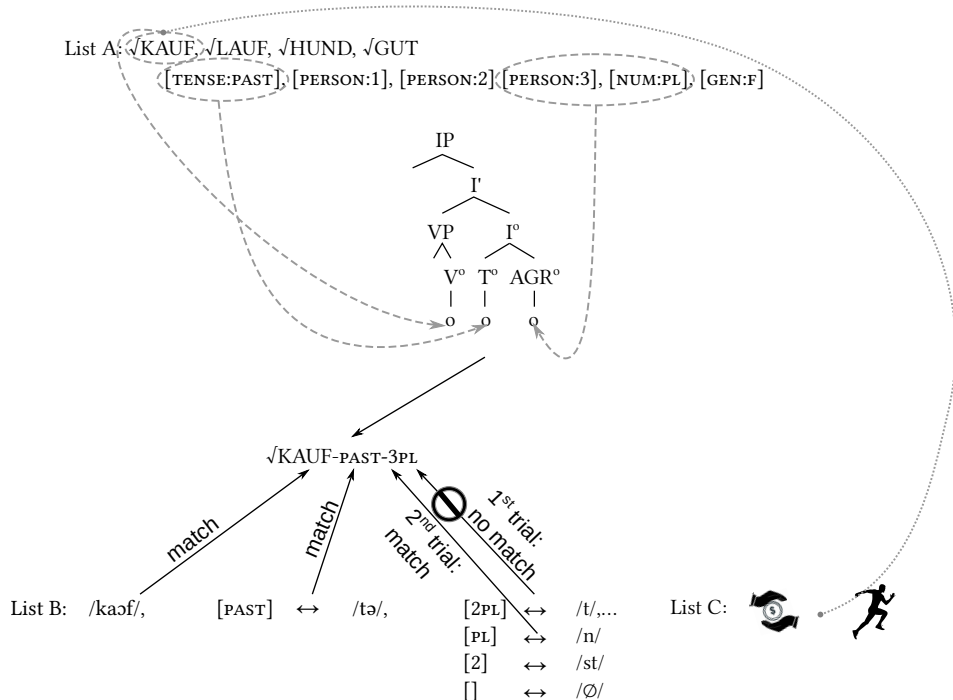
Figure 3: example kauften {'kaufen', PAST, 3PL}, showing the basic DM-architecture Bobaljik (2017: 6), Albright & Fuß (2012: 248-250)

the sole kind of structure (apart from the distinction between roots and feature values) that enters list A. Otherwise this list is meant to be an unstructured cloud. In particular, the individual items are not pre-arranged into paradigms.

The next step we see in Figure 3 is the selection of a root and several features, all of which attach to the terminal nodes of the syntactic tree. From my perspective as an outsider to the theory, a mystery is connected with this step: what kind of mechanism, apart from communicative intent, determines which feature values are selected? For example, somewhere in the model there must be information on which contexts require which tense-aspect categories to be realised in the language at hand (cf. English *He is eating* vs. German *Er isst*perfective-or-imperfective). In any case, the root and the feature values are arranged by the syntax, independently from any phonological information. So the intermediate result is an abstract string like √KAUF-PAST-3PL.

Now, vocabulary insertion can take place. The phonological form /kaɔf/ is one of the forms over which √KAUF is an abstraction, so they match (at least this is what I have been able to conjecture; insertion for roots in simple cases is not

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extensively discussed in the DM-literature). Also for the second part of the abstract string, i.e. PAST, there is just one matching vocabulary item, i.e. [PAST] ↔ /tə/, so this item is inserted. Things get more interesting and more difficult with respect to [3PL]. Several vocabulary items are available for realising AGR and, crucially, these are ordered from most to least specific. Now the mechanism runs through this ordered list and first tries the highest (= most specific) vocabulary item, i.e. [2PL] ↔ /t/. However, 2nd person does not match 3PL, so this item is discarded. The second highest item is [PL] ↔ /n/, which does match 3rd person plural (i.e.: there is no contradiction). So this item is inserted. Crucially, the same item matches 1PL, hence it would likewise be inserted in the derivation of *kauften* {'kaufen', PAST, 1PL}.

What we see here are two uses of underspecification at once. First, it serves to order the list in such a way that, by browsing the list downward, insertion may operate on the Paninian Principle (= Elsewhere Condition = Subset Principle). That is: given two rules, where one is more specific than the other, application of the more specific one – here: insertion of the more specific item – blocks application of the less specific one (for an overview on the principle cf. Anderson 1992: 132. Put differently: the most general rule – here: insertion of the least specific item – is the default and whenever there are more specific rules/items available, the most specific one of them will overwrite the default. The "only" job of the data-tackling linguist is to find the most economic list for the data set at hand. With respect to the German past indicative forms, I adopted the list from Bobaljik (2017: 6), although from a German Linguistics point of view it might be debatable whether the schwa belongs to the tense or agreement suffix (pro Bobaljik's solution: the verb *tuen* 'do'). Moreover, as far as I can see, the order of [PL] ↔ /n/ and [2] ↔ /st/ is arbitrary since none of them is more specific than the other.

The second, ensuing, use of underspecification here is modelling syncretism. As mentioned above, the vocabulary item [PL] ↔ /n/, matching 3PL as well as 1PL, may be inserted into both potential strings, √KAUF-PAST-**3**PL (cf. Figure 3) as well as √KAUF-PAST-**1**PL. Likewise, when we derive the realisation of √KAUF-PAST-**3SG** or √KAUF-PAST-1**SG**, the mechanism runs through the list, discards [2PL] ↔ /t/, [PL] ↔ /n/, and [2] ↔ /st/ as not matching and ultimately reaches the least specific pairing [] ↔ Ø. So for both persons, AGR is realised as null. Please note that this way systematic syncretisms may be captured without referring to paradigms.[16]

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[16]The 1/3 conformity really is a syncretism in the sense of fn. 7 since the two person values are distinguished overtly elsewhere in the language, viz. in the singular of the present tense (*kaufe* vs. *kauft*).

However, underspecification is not the only way to model syncretism in DM (although the most desirable one according to Harley 2008: 253). In particular, syncretisms that appear to be even more systematic than the ones treated above may be modelled by a process called impoverishment. This is the deletion of features/feature values in the abstract string that has been issued from the syntax and awaits vocabulary insertion (Embick 2015: 139). For example, German determiners distinguish three gender values in the nominative singular (nominative: *der*, *die*, *das*) but neutralise this distinction in the nominative plural in favour of the feminine form (nominative: *die*),[17] in accordance with Greenberg's well-known universal no. 37. So all three output strings, √D-NOM-**MASC**-PL, √D-NOM-**FEM**-PL, and √D-NOM-**NEUTR**-PL have to yield *die* in the end; likewise for the other case values (*derer*/*n*, *den*, *die*). In this situation it seems reasonable to delete the gender value from the string altogether. A rule expressing this is shown in (17) for the example at hand.

(17) [+MASC/FEM/NEUTR] ⇒ FEM/_PL
      read: any gender value is set to the feminine under the condition of a
      plural environment

Having addressed syncretism, which is handled by underspecification or impoverishment in DM, I have to touch upon allomorphy, too, since these two types of phenomena – syncretism and allomorphy – appear to be the standard testing ground for any morphological theory. Allomorphy then can be handled by adding conditions on vocabulary items (Embick 2015: 169). For example, the German vocabulary item [PAST] ↔ /tə/ works well in a derivation like the one in Figure 3 above but would yield ungrammatical forms for strong verbs, e.g. the past 3rd person plural of *gehen* 'walk' would be wrongly predicted as */gehtən/. In order to derive the correct form /gɪŋən/ we may use the adopted vocabulary item in (18).

(18) /gɪŋ/ ↔ √GEH/_PAST
      read: /gɪŋ/ is the form to be inserted for √GEH under the condition of a
      past environment

Additionally, the insertion of [PAST] ↔ /tə/ has to be suspended in some way or other. A remaining problem of this analysis is how to supply the schwa of /gɪŋən/ when assuming Bobaljik's (2017) segmentation.

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[17]Cf. Helbig & Buscha (2001: 214). Note that the following analysis works only if *die* is viewed as feminine per se (Meinunger 2017, but cf. Leiss 1994: 291-292 on why this feature value has little to do with femininity). For relevant considerations cf. also Kramer (2019: 184).

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At this point we have seen a snapshot of DM in action, not even mentioning further processes like fusion under locality conditions, fission, or readjustment (also note that linearization is not standardly predictable from syntax).[18] To conclude for the moment, DM's slogan, it's "Syntactic Hierarchical Structure All the Way Down" Harley & Noyer 1999: 3 is to be taken with a grain of salt: it's syntactic hierarchical structure all the way down until vocabulary insertion and its satellite processes. That is, many things can happen on the way from syntax to final spell-out and it is this many-faceted interface that deserves the name *morphology* in DM. Crucially, however, DM strives to make even these processes as predictable as possible.

In any case, the architecture as a whole permits reading paradigms off individual derivations (e.g., Table 5 may be read off Figure 3) but there are no predesigned paradigms in the model. That is: to the extent that DM provides a model of language representation and processing, paradigms do not have any psychological reality in the theory (cf. also Bobaljik 2002: 53). This negative attitude towards paradigms will be summarised and put into perspective in the following section (Section 2.2.2.).

2.2.2 The status of paradigms in DM

This section is not a real section but a convenient synopsis for those readers who skipped the introduction to DM. So the main point of the section is summarising what we saw in Section 2.2.1. with respect to paradigms in DM. There are at least two places in the architecture at which paradigmatic structures would be expected by the average linguist but in fact do not play a role.

First, feature values (list A) are not organised into paradigms. Obviously, they could be (though, with a placeholder for roots/stems); however, according to the theory this is just not necessary for deriving correct forms. And unnecessary presyntactic structure is to be avoided in a strictly compositional approach (Embick 2015: 17).

Second, vocabulary items (list B) are indeed ordered but not according to intersecting feature values (as in paradigms) but according to specificity. It is striking

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[18]Fusion = combination of two sister nodes into one, which retains the features of both input nodes but has no internal structure (Bobaljik 2017: 15); mnemonic: fusional morphology in the typological sense. Fission = splitting of a single node in the syntax into two nodes in the morphological representation (Bobaljik 2017: 19); mnemonic: multiple exponence. Readjustment = phonological alternation after vocabulary insertion (Bobaljik 2017: 7); mnemonic: remedy for everything else that leaves derivation ill-formed.

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that DM is all the same able to capture syncretism and allomorphy – phenomena that are otherwise thought to be inextricably linked with paradigms (cf. also Bobaljik 2002: 54).

All of this does not mean, however, that practitioners of DM do not use paradigms for presentation. To pick a random example, Harley (2008) is full of paradigms. The important thing is that they do not have a primary status in the architecture. To use the food metaphor from Trommer's (2016) title: from a DM perspective, compiling paradigms is like pre-sorting the ingredients in your kitchen cupboard according to nutrients – useful for some purposes but not necessary (and hence not desirable) for cooking tasty meals.

I conclude this micro-section by a synoptic quotation, even more explicit than the corresponding one in Section 1:

> Importantly, paradigms are epiphenomenal in DM. They have no theoretical status and they are never referred to by morphological operations. (Kramer 2016: 97)[19]

2.3 Comparison

This section serves to compare the two approaches regarding their shared detachment from paradigms and their shared tendency to reduce inflectional morphology to something else (constructions or the syntax/phonology interface). To this end I will first address their respective standard data and then delve into a more theoretical discussion. For completeness, also Autonomous Morphology is occasionally integrated into the picture before it takes centre stage in Section 3.

While Haspelmath (2011: 58–59) refers to Turkish for showing that morphology can look like syntax, proponents of DM adduce Swahili for the same reason. However, Swahili inflection does not only display a high degree of compositionality but it also displays purely positional contrasts – something that we tend to expect from syntax exclusively. For example, consider the pair of examples in (19a) and (19b), taken from Trommer (2001: 18).[20]

(19) Swahili (Atlantic-Congo, Tanzania et al.)[21]

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[19]One reviewer remarks: "Interestingly, they [= paradigms] seem to organize those morphological operations into meaningfully related sets, which would place them above those operations. In this sense, they are not epiphenomenal but even more abstract than the abstract operations". From a DM-perspective, this is not a contradiction: the meaningfully related sets might be constructed by the linguist or the L2-teacher; however they are not part of any L1-speaker's mental grammar. This position gains some plausibility from anecdotal evidence: it appears hard to write down L1-paradigms if one is asked to do so for the very first time.

[20]In a similar vein cf. Crippen (2019).

[21]https://glottolog.org/resource/languoid/id/swah1253

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> a. ni-wa-penda
> 1SG-3PL-like
> 'I like them.'
> b. wa-ni-penda
> 3PL-1SG-like
> 'They like me.'

To be sure, this does not work equally well for all forms, cf. Table 6.

Table 6: Swahili person forms (Almasi et al. 2014: 15, 102; only M-/WA-class)

	subject		object	
	singular	**plural**	**singular**	**plural**
1ˢᵗ person	ni	tu	ni	tu
2ⁿᵈ person	u	m	ku	wa
3ʳᵈ person	a	wa	m(w)	wa

Still, writing down the first line of the paradigm appears to make as much sense as writing down nominal case forms for English, compare Table 7 to Table 8.

Table 7: Swahili person forms extracted from Table 6

	subject	**object**
singular	ni	ni
plural	tu	tu

Table 8: English nominal case forms

	subject	**object**
singular	car	car
plural	cars	cars

Obviously, here it is not the paradigm that tells the language user which form is the subject or object – it is the combinatorics (here: surface linear order). Switching to a constructionist perspective taken to the extreme, even the second and

third line of the Swahili paradigm may be treated very much like the first line: it is still the relative position (slot) of a given form that determines its syntactic function – and makes it vary in idiosyncratic ways (e.g. *u* ⇒ *ku*).

So to some extent both kinds of data – Turkish-style and Swahili-style – support the idea that paradigms might be quite parochial a format: apt for Latin type languages but hardly beyond.

To repeat, with regard to the constructionist perspective, the above conclusion is my own one, neither Haspelmath (2011:58–59) nor related works plainly oppose against paradigms. To the contrary, Haspelmath (2000) even allows periphrases as paradigm cells and Booij (2016) reconceptualises paradigms as "second order schemas". However, let's have a closer look at these two conceptions.

Haspelmath (2000) argues against a gap-filling account of periphrasis and in favour of a grammaticalization-based account.[22] Crucially, he does not only allow periphrases as paradigm cells but, by extension, also entire clauses:

> However, it is not difficult to find syntactic phenomena that provide a striking analog of inflectional paradigms, gaps, and periphrasis in morphology. Again, a good example comes from English, where only a small subclass of verbs can occur without complications in interrogative and negative clauses. In (16), this well-known pattern is represented in such a way that the similarities with morphological suppletive periphrasis become apparent. [...] Clearly, "periphrastic *do*" is periphrastic in much the same way as the cases of morphological periphrasis, but the filled gaps in (16) are not morphological monolectic forms. *Did you see* is a syntactic phrase which replaces the impossible syntactic phrase **saw you.* (Haspelmath 2000: 662)

Here is Haspelmath's example number (16), reproduced as Table 9

Table 9: English (Haspelmath 2000: 662)

decl., affirm.	interrogative	negative
You are here	*Are you here?*	*You are not here*
You saw her	[*Did you see her?*]	[*You did not see her*]
	(**Saw you her?*)	(**You saw not her*)

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[22]Some of Haspelmath's (2000) arguments against a gap-filling account may be countered by the criterion of feature intersection (Brown & Hippisley 2012: 250-252, Reiner in press); however this is beyond the scope of the present paper.

Tabea Reiner

This extension seems simply logical; however, it raises the question whether there is anything at all that can*not* be described by paradigms in this sense, i.e. by oppositions. In fact, a strictly constructionist perspective mandates that any set of clauses (transparent or not) is viewed as a set of constructions between which the language user may chose, hence as a paradigm in the above sense. This notion of paradigm, then, is so abstract that it becomes vacuous: if everything is paradigmatic it is pointless to state that such and such linguistic phenomenon (e.g., inflection) is, indeed, organised paradigmatically.

Turning now to Booij's CxM, as summarised in Booij (2016), the first thing to note is that inflection as well as word formation and phrasal idioms are captured by constructional schemas. (20) is an example for inflection.

(20) English Booij 2016: 440, number (37) there
$<[(x_i)_{\omega\text{-}j} \leftrightarrow [N_i, +sg]_j \leftrightarrow [SG [SEM_i]]_j>$

Read: x_i constitutes a phonological word (ω), which is associated with a certain morphosyntactic structure, which is associated with a certain semantic structure; the indices show identity relations.[23]

Schemas that relate to each other (i.e.: share at least one element) constitute second order schemas, e.g. (21).

(21) English Booij 2016: 440, number (39) there
$<(x_i)_{\omega\text{-}j} \leftrightarrow [N_i, +sg]_j \leftrightarrow [SG [SEM_i]]_j> \approx$
$<(x_i\text{-}z)_{\omega\text{-}j} \leftrightarrow [N_i, +pl]_j \leftrightarrow [PL [SEM_i]]_j>$

Such schemas correspond to traditional paradigms in an obvious way and, crucially, they are said to organise language in their own special manner (for a lucid example from Saami cf. Booij 2016: 442). However, paradigms in this sense, central as they are, do not constitute the fundamental building blocks of morphological theory as Stump or Spencer would have it. Rather, they emerge from a more general organisational principle, which is the constructional schema: as soon as two or more schemas share one or more elements, they constitute a second order schema and in this sense a paradigm. To put it in a nutshell: paradigms are relevant but not basic (also cf. Marzi et al. 2020: 239–240, 257).

To conclude on Haspelmath (2000) and Booij (2016), while they do use paradigms in some sense, I argued that, implicitly, they deprive paradigms of any fundamental theoretical status: the former extends the notion to such a degree that

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[23]Inflectional class information can be integrated into the morphosyntactic structure or modelled by second order schemas (to be introduced below).

it becomes void and the latter's approach allows reducing paradigms to a mere consequence of the fact that there are shared elements between constructional schemas.

Note that both takes on paradigms just presented differ from the position of Autonomous Morphology. There, periphrases are allowed into paradigms, too; however only under a very restricted notion of periphrases, which ensures that they are mere surrogates for true word forms (Brown & Hippisley 2012). When, moreover, Stump 2002: 147-148 speaks of "syntactic paradigms", he means something different: word forms seen as instantiations of a lexeme, among which a given syntactic context may chose the appropriate one.

Coming back to CxM, with regard to the non-fundamental status of paradigms it is surprisingly close to DM, except that the demotion is explicit in DM. However, in another regard, it is DM that implements considerations otherwise basic to CxM as well as to Autonomous Morphology. Prima facie non-compositional phenomena like syncretism, allomorphy (including suppletion) or polyfunctionality seem to call for a constructionist account and/or might constitute the irreducibly morphological in language (more on this relation below). Yet, also DM has developed means to deal with such phenomena: some are handled directly by underspecification, others may require processes like impoverishment, fusion, fission, or readjustment (cf. Section 2.2.1). Although even these processes are designed to be as predictable as possible, one cannot deny that this is much more than just syntactic derivation plus vocabulary insertion. Put differently, if morphology is only an interface between syntax and phonology (as DM says) then it is a quite rich one. To be fair, not all processes (or rules) mentioned above are embraced equally by all proponents of DM. For example, Trommer takes a very critical stance on the accumulation of rule types in DM, summarised in Trommer (2016: 61). In the same volume, Haugen (2016) argues explicitly against the use of readjustment rules, in particular when modelling stem allomorphy. Also other practitioners of DM try to restrict the purview of readjustment rules (e.g. Pomino & Remberger 2019: 475). In fact, my example of /gɪŋ/ above has been designed in this spirit.

As an interim summary, I compared CxM and DM with respect to their take on paradigms (implicit vs. explicit demotion) as well as with respect to their conception of morphology vis-à-vis other levels of description (explicit vs. implicit acknowledgment, but see below). In the rest of this section, I will extend the comparison to three further dimensions, ordered in growing distance from the actual topic of paradigms and independent morphology: the notion of word, the question of psychological reality, and the kind of restrictiveness found in the respective approach.

Tabea Reiner

The notion of word is discussed at length in Haspelmath (2011), from which I have cited but a snippet up to now. In brief, his overall discussion concludes that criteria for a universal definition of word remain elusive[24] – and so does a definite border between morphology and syntax. This fits well with the general constructionist idea of a lexicon-syntax continuum. However, from my perspective as an outsider to the theory, any commitment to this idea is in conflict with acknowledging morphology as a level of description qualitatively different from both, syntax and the lexicon: how can we draw solid lines in the middle of a continuum? Thus, reflecting the notion of word casts some doubt on the extent to which constructionist accounts are able to acknowledge "morphology by itself" (to allude to Aronoff's 1994 title). This may be a dividing line between CxM (Cx"M"?) and Autonomous Morphology.

Concerning their own definition of word, Autonomous Morphologists are hard to pin down, though. Working in the tradition of Word-and-Paradigm approaches, they seem to accept that for any given string we can tell whether it constitutes a word or not – no matter if we are looking at data from Latin, Turkish, Swahili or West Greenlandic. The only explicit pertinent discussion I am aware of is in a footnote in Luís & Spencer 2013: 127–128, where they elegantly delegate the task to Canonical Typology (more on this relationship in Section 3 and Section 5).

Turning now to DM, the theory is not particularly obvious with respect to its attitude towards a universal notion of word. Certainly, it is universalist in spirit and its hallmark is the (far-reaching) structural isomorphism between word structure and phrase/clause structure, which seems to leave no room for words as different from phrases/clauses. However, even in DM there is an endpoint of the derivation, e.g. /baɪz/; and other terminals in the same clause structure tree host their own derivations, e.g. /hiː/. In this sense, there are words as opposed to larger phrases. So, latently, DM does recognise words.

The question of psychological reality can be phrased as: do formats of description (possibly including paradigms) have a role to play in our mental representation of language? This question is the least obviously answered in Autonomous Morphology. Again, the topic does not appear to receive much attention in the literature. My impression is that Autonomous Morphologists silently follow a weak version of a Language-as-an-abstract-object approach (Katz 1981), i.e. it is simply not their intention to describe any mental representation of language as a system (Chomsky's competence or Saussure's langue), rather they focus on abstractions over the parole. For example, this position is suggested by Aronoff (2016:197–198), where the high usefulness of paradigms in language description

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[24]But cf. Gil (2020) for a recent proposal.

is enough to justify their role as a central tool for the linguist. Note that being useful for the linguist and being represented in the language user's mind are not necessarily the same thing (Haspelmath 2018: 92, fn. 7).[25]

This is in sharp contrast to DM, which inherits the demand for providing a psychologically real model from its background in GB/Minimalist syntax. The demand concerns every aspect of the model, including the irrelevance of paradigms. However, pertinent psycholinguistic evidence seems to be scarce. Even Barner & Bale (2002), who do collect many pieces of psycholinguistic evidence from the literature, only cover one aspect of the model (viz. roots lack syntactic category information). There is a need for more comprehensive, custom-tailored experiments, in particular for ones checking whether or not speakers draw on ready-made paradigms in language production and/or comprehension.

In comparison to DM, the psycholinguistic evidence adduced in favour of CxM seems to be much more encompassing. In particular, it has been shown that word forms can be both, computable as well as holistically stored, without contradiction (Zwitserlood 2018, Masini & Audring 2019: 7–8, Jackendoff & Audring 2020: ch. 7).[26] The crucial point from the perspective of CxM, though, is not that word forms *can* be stored but that they *are* in fact stored (different from DM, cf. McGinnis-Archibald 2016: 392, fn. 3). If stored forms relate to each other, they may constitute paradigms in Booij's (2016) sense.

The attitude towards restrictiveness seems to differ vastly between the theories discussed here. The difference is often said to lie in striving for maximal empirical coverage (CxM + Autonomous Morphology) vs. striving for testable predictions (DM). For example, Kramer (2016) draws this line. However, I will argue that the difference is rather about *where* to formulate restrictions.

Surveying work in Autonomous Morphology, it would be utterly wrong to say that these researchers do not formulate restrictions: every generalisation over data is a falsifiable prediction to the effect that new data are hypothesised to comply with the generalisation. For example, Baerman et al. (2005: 220–221) types of syncretism restrict the range of syncretisms we expect to find in the languages of the world. In short, there *are* restrictions and they reside in generalisations over (descriptions of) data, with paradigms being used a central tool for description. Another – more obvious and more recent – example of restrictiveness is Herce (2019).

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[25] This is one of the few aspects of Haspelmath's comparative concepts that I embrace, cf. Reiner in press

[26] Typological coverage might be better; however this is a problem of current psycholinguistic research more generally, which may be overcome in the future (cf., e.g., http://www.llf.cnrs.fr/labex-efl).

Similarly, practitioners of CxM or Construction Grammar more generally use the construction as a maximally flexible tool of description *before* they start looking for cross-linguistic tendencies in the data thus described (e.g., Goldberg 2006: ch. 7–9). The tendencies are then to be explained by general cognitive principles (Goldberg 2006). Crucially, cognitive principles restrict the range of what we expect to find in human (linguistic) behaviour but there is no need to build the restrictions into one's descriptive tools.

This is different from DM, which, as a generative theory, intends to model language as a specific competence, identified by specific restrictions, which, consequently, have to be part of the model. Thus, anything that cannot be derived by the model is predicted not to be accepted by native speakers and vice versa (derivable ↔ accepted).

So both kinds of approach acknowledge restrictions (and I am agnostic as to which way of doing so is the better one). Incidentally, both also embrace the liberties of language, at least to a certain extent. For DM, this might be not so obvious; however recall that they have list C at their disposal, although this part of the architecture seems to be the one that is worked out least of all.

Taking stock of this section, it appears that, surprisingly, Autonomous Morphology never patterns with CxM, cf. Table 10.

3 Defending morphology and paradigms

Recalling Table 10, one might expect that Autonomous Morphologists defend their approach against CxM sense much more forcefully than they defend it against the various incarnations of DM. However, the opposite is true. The present section will elaborate on this remarkable situation and evaluate tentatively whether the Autonomists' defence of morphology by itself – including paradigms – succeeds.

Virtually everyone who advocates the idea of Autonomous Morphology includes in their overview publications some words on why DM fails. For example, Brown & Hippisley (2012: 19–29) present DM as an alternative but inferior approach. Other examples include Spencer (2004: 73–89), Aronoff (2016: 194–195) and, avant la lettre, Aronoff (1994: 82–85). Additionally, Spencer's (2019) review of Embick (2015) represents a recent argument against DM from an Autonomist's perspective.

One of the central arguments is that there are phenomena that cannot be described in purely syntactic or lexical terms, i.e. so called morphomes (for a recent overview of the notion cf. Enger 2019: 160–166). Crucially, the most prominent

Table 10: Summary of theory comparison

	CxM	Autonomous Morphology	DM
universal notion of word?	rather no	latently yes	latently yes
paradigms psychologically real and useful?	maybe psychologically real, not fundamentally useful	useful	not psychologically real, occasionally useful
morphology qualitatively distinct from syntax/lexicon?	?	yes	the little that there is: yes

examples of morphomes directly refer to paradigms: inflectional classes and patterns of stem allomorphy (Maiden 2009). For substantiation, consider an instance of the latter case, viz. Maiden's (2009) L-pattern in Romance verb morphology. Table 11 represents the pattern abstractly, Table 12 gives an example.

Table 11: L-pattern (Maiden 2009)

	1sg	**2sg**	**3sg**	**1pl**	**2pl**	**3pl**
present indicative	A-	B-	B-	B-	B-	B-
present subjunctive	A-	A-	A-	A-	A-	A-

Table 12: Spanish example for L-pattern (Maiden 2009)

	1sg	**2sg**	**3sg**	**1pl**	**2pl**	**3pl**
present indicative	digo	dices	dice	decimos	decís	dicen
present subjunctive	diga	digas	diga	digamos	digáis	digan

Crucially, this pattern, among two additional ones, pervades irregular verbal morphology in Romance languages and comes without any obvious lexical or syntactic core: why should certain verbs show the same stem for exactly these feature value combinations and not for others? In particular, it is hard to imagine a semantic or syntactic property that is shared by, e.g. *digo* and *digan* but not *digo* and *dicen*. What the pattern does refer to, however, are the pairings of word forms and feature values they realise, i.e. the cells of a paradigm: it is always the same set of cells that shares a stem. So while the stem as such is not predictable its distribution is and, crucially, this distribution refers to paradigm set-up. In short, morphomes seem to provide very clear indication that, after all, there is something genuinely morphological about language, more precisely something

that must be captured by paradigms in Stump's sense (cf. Section 1).[27]

In a way, this line of research is continued by Ackerman & Malouf (2013), who adduce evidence that it is the complexity of paradigm structure rather than the complexity of individual distinctions and realisations that predicts learnability (so here also the question of psychological reality is touched upon). However, their results have recently been called into question (Culbertson et al. submitted).

Moreover, recall that also in DM there is more between syntax and spell-out than just vocabulary insertion Section 2.2, Section 2.3. Against this background, it does not come as a surprise that by now also proponents of DM have started to embrace morphemes. Trommer (2016) provides a "postsyntactic morpheme cookbook", not even using the full DM-machinery. To be prudent, Trommer's paper is the only DM-treatment of morphemes that I am currently aware of. Future research will show whether Autonomous Morphologists will be beaten at their own game.

A more urgent, but largely unrecognised threat comes from the "friendly takeover" by constructionist accounts, outlined in Section 2.1 and Section 2.3. While, e.g., Spencer (2001), Spencer (2004: 84-86) welcomes constructionist thinking, he does not seem to recognise that this family of theories tears down the very boundaries he tries to defend: as indicated in Section 2.3 above, Construction Grammar does not recognise any qualitative difference between syntax and the lexicon, let alone a discrete level in between to be justly called morphology (cf. also Goldberg 2006: 5, Goldberg 2013: 17, Hoffmann & Trousdale 2013: 1).

As a consequence, it does not appear to be a coincidence that precisely those morphologists who adopt a constructionist perspective most consistently and most explicitly (e.g., Booij 2010) are those who are *not* at the same time Autonomists. Moreover, while (Autonomist) Network Morphology (Brown & Hippisley 2012) stands side-by-side with Canonical Typology in the Surrey Morphology Group,[28] the latter theory is free to develop an integrative perspective on autonomy. That is, canonical (ideal) morphology might be regarded as *non*-autonomous, reducible to either syntax or the lexicon or both, whereas deviations from this ideal represent autonomous morphology – with the deviations often presenting themselves as patterns in paradigms. To the extent that it is the deviations rather than the canonical ideal that we expect to find in real languages, Canonical Typology and Network Morphology fit well together indeed.[29] This relationship, however, does not prevent Autonomous Morphology, including its

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[27]For a typological survey of morphomic structures cf. Herce (2020a).

[28]Even literally so: https://www.smg.surrey.ac.uk/approaches/ (as of 24.03.20202).

[29]These deliberations are what I understand from Gaglia & Hinzelin (2016), Hippisley (2017) and Herce (2020b).

commitment to paradigms, to be absorbed by constructionist approaches, as described above.

In sum, so far the attempts at defending morphology (as a distinct level of description) and defending paradigms (as defined in the introduction of this paper) have not ultimately succeeded – or the attempts are missing altogether. Does this mean that paradigms have nothing to offer for any linguistic theory? To my mind, one use of paradigms remains in any case. This is the topic of the next section.

4 A remaining use for paradigms: restricting recursion

The marginalisation of paradigms as fundamental organisational units has been noted and criticised recently by Diewald (2020), focussing on constructionist approaches. Arguing from a diachronic perspective, she reminds us that [+ paradigmaticity] and [- paradigmatic variability] are two of Lehmann's (2015: 132) six famous criteria for grammaticalization (and that speaking of grammaticalization is pointless without a categorical distinction between grammar and non-grammar). Thus, in Diachronic Construction Grammar paradigms are both: marginalised as well as fundamentally needed. To escape from this dilemma, she suggests the following concept of paradigms: as constructions-of-constructions they are complex signs, which may constitute nodes in a constructional network. She notes that this is similar to Booij (2016); however, as far as I can see, Diewald (2020: 297-301) goes one step further in that she explicitly excludes open class paradigmatic relations from the notion of paradigm. This makes, I would argue, a huge difference, in particular from a diachronic perspective. For example, consider German *R*/*richtung* 'direction/to' in (22) vs. German *R*/*riesen* 'giant' in (23).

(22) German (constructed)
      Ich geh   Richtung   Bahnhof.
      I   walk direction/to station
      'I am walking towards the station.'

(23) German (constructed)
      Dort ist eine Riesen-Statue Dort ist eine riesen Statue
      there is a   giant-statue   there is a   giant statue
      'There is a giant statue.'

The former would qualify as grammaticalized on Diewald's (2020) account since it enters the closed class of prepositions. Note that I am assuming here that

this class may be described by pairs of feature values. The latter, by contrast, would not qualify as grammaticalized on Diewald's (2020) account since there is no closed class of either "grading initial conjuncts" or adjectives.

Thus, Diewald's (2020) conception of paradigms might reintroduce them into Construction Grammar as fundamental organisational units. Crucially, however, as nodes in constructional networks they have to be psychologically real by themselves (not merely being a consequence of some other psychologically real entities and processes). Here, Diewald 2020: 306-310 provides a rough design for a psycholinguistic study as well as a core linguistic argumentation to the effect that certain grammaticalization processes are hardly conceivable without mental representations of paradigms in her sense.

So again, the question whether paradigms (in whichever sense) are psychologically real turns out to be pivotal. To the extent that this remains a tricky question, I suggest that anyone arguing in favour of a fundamental status of paradigms should look for arguments independent of this question, i.e. for a use of paradigms that is just that: fundamental to the linguist but not necessarily reflected in the language user's mind (very much in the spirit of Aronoff 2016: 197-198, quoted above). In the rest of this section, I will present such a use.

There is one kind of data that neither CxM nor DM is good at handling, i.e. limits on recursion. The following paragraphs provide a snapshot of such data, explains why they are problematic for the two approaches and, finally, presents the paradigm in Stump's sense as a solution.

Basically, CxM and Construction Grammar more generally share with Autonomous Morphology the strategy to seek restrictions in generalisations over data rather than building the restrictions directly into their descriptive tools (cf. Section 2.3). This strategy adheres to Haspelmath's (2004) postulate of a sharp distinction between description and explanation. At the same time, this strategy requires the descriptive tools to be as flexible as possible: they must be able to capture whatever may be found in a language. So the often heard accusation that "everything is a construction" (e.g., Van Valin 2007: 236) misses the point since here lack of restrictiveness in descriptive tools is a virtue, not a weakness.

Against this background, it is clear that CxM can handle every kind of data well: all we need is an association between a form and a meaning, i.e. a construction. This means that individual morphs like, e.g., thematic vowels are not forced to have a meaning in isolation. It is the verb form as a whole that has a meaning to begin with and this association of meaning and form constitutes a construction. Likewise it is the clause as a whole that has a meaning and again, this association constitutes a construction. Incidentally, a construction may have constituent

constructions and in this sense there is internal structure; however the internal structure is not generated bottom-up via valency or subcategorization.

So verb forms are constructions, clauses are constructions, and the rare case of a monofunctional affix (that is, rare in SAE) is a construction, too. Ideally, we obtain a comprehensive network of constructions for each language. These networks, I hold, are again organised in a network to the extent that they share certain properties.[30] Crucially, these properties are abstractions over individual minds rather than having any psychological reality in their pure form. In principle, the most encompassing of networks might be read as set of generalisations about language. As argued above (Section 2.3.), generalisations *are* predictions, including predictions about what there is *not*. To take an example from Autonomous Morphology, if there is no language to be found with syncretism of 1SG, 2DU, and 3PL subject agreement,[31] we may predict that this kind of syncretism is impossible. The next step is gathering more data (from the same as well as other languages) in order to see whether the prediction of absence holds. However, most practitioners of CxM and Construction Grammar more generally do not seem to be concerned too much with that "dark matter" (I am borrowing the metaphor from Werner (2018) on word formation here). To pick a recent example, the ongoing project "FrameNet & Konstruktikon des Deutschen" focusses, according to its self-description, on the wealth of what there is, not on finding systematic gaps.[32] This might seem to be a mere matter of emphasis – but if we do not even care for the potential absence of certain phenomena we will not be able to explain (in any sense of the word) that absence.

Beside a certain type of syncretism, another example for a potentially non-occurring kind of phenomenon is the one I am concerned with in the present section: meaningful iteration of affixes (presuming here that we know in each case what counts as an affix as opposed to a clitic or function word and that we can always decide whether the affix is inflectional or derivational). Consider (24) based on (25).

(24) Turkish (p.c., Seda Yilmaz Wörfel)
      yap-tı-m
      do-PST-1SG
      'I did'

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[30]For a pertinent but rather non-constructionist proposal, cf. Reiner in press.

[31]Surrey Person Syncretism Database, https://www.smg.surrey.ac.uk/personsyncretism/.

[32]https://gsw.phil.hhu.de/; the project relates to parallel projects for other languages.

(25)   Turkish (p.c., Seda Yilmaz Wörfel)
       *yap-tı-tı-m
       do-PST-PST-1SG
       intended: 'I had done'

Judging from the "syntax-like" systematicity of Turkish verbal forms and from the possibility to iterate derivational (causative) affixes (cf. Section 2.1), the un-availability of a systematic iteration in (25) is surprising. Why not have a past form (*yaptım*) as the input to another past formation (*-tı*), yielding a past-of-past meaning? In other words: if we define recursion as the application of a given structural-semantic operation to an output of some former application of the same operation, example (25) represents the limits of recursion. In fact, I am not aware of any language that allows for recursion of inflection (or what is usually described under the rubric of inflection).[33] So the limitation seen in (25) might be quite general. For present purposes, however, the important point is that there is a limitation at all.

Thus, this is a kind of language fact that CxM will capture implicitly but not care for. What about DM? Striving for a restrictive model, this approach is ex-pected to predict the ungrammaticality of (25) explicitly. At first sight, this is true: as long as there is only one T-node in the syntax, the pattern in (25) is indeed excluded, since there is simply no terminal for the second *-tı* to attach to.

However, in DM the problem resurrects at a later stage of the derivation: after vocabulary insertion has selected the most specific candidate available, how can we stop the mechanism from starting over again, yielding for example *play-ed-ed (Embick 2015: 97)? Note that this is not just an empty iteration of forms, since every vocabulary item, including [PAST] ↔ /əd/, comes with a function. More precisely, a vocabulary item is the pairing of a phonological form and information on where this form may be inserted (cf. Section 2.2.1.), with this information consisting of morphosyntactic feature values. So when [PAST] ↔ /əd/ attaches to the single T-node multiple times (in principle, ad infinitum), it adds [PAST] every time. Embick's solution to this problem is a stipulation called *Uniqueness*: "In a derivation, only one Vocabulary Item may apply to a morpheme" (Embick 2015: 98). So DM can handle data like (25) but only by means of a stipulation.

According to Spencer's (2019) review of Embick (2015), the need for the Unique-ness stipulation arises from the "attempt to derive word structure (directly) from

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[33]But cf. Van der Van der Voort (2016) for potential examples. Importantly, it has to be the whole structural-semantic operation that is applied twice. Hence, for instance reduplicative plurals do not count, since here we are dealing with one structural operation having one semantic effect.

syntactic structure" (Spencer 2019: 218). I tried to show above that syntax is not the problem here. However, I agree with Spencer 2019 that paradigm-based theories are not affected by the problem of recursion. The reason is that the paradigm as such restricts recursion: since rows and columns represent different pieces of information, iteration is excluded automatically. For example, since PAST will not appear in both, a row and a column, no cell can contain a realisation of PAST-PAST. Consider the partial paradigm for Turkish in Table 13.

Table 13: Partial paradigm for Turkish, gathered from Kornfilt (1997: ch. 2.1.3).

	1SG	2SG	3SG	1PL	2PL	3PL
FUT	-(y)AcAK-Im	-(y)AcAK-sIn	-(y)AcAK-ø	-(y)AcAK-Iz	-(y)AcAK-sInIz	-(y)AcAK-lAr
REP pst	-mIs-Im	-mIs-sIn	-mIs-ø	-mIs-Iz	-mIs-sInIz	-mIs-lAr
PST	-DI-m	-DI-n	-DI-ø	-DI-k	-DI-nIz	-DI-lAr

Thus, the paradigm can do what Construction Grammar fails to do and what DM needs a stipulation for: modelling the limits of recursion. Another advantage of paradigms is that no one needs to postulate them. They do have a secondary status in CxM as well as in DM (cf. Section 2); however, they are there.

Before concluding the paper, let me draw your attention to a limitation of my reflections: I focussed solely on phenomena that are usually considered to be inflectional in a narrow sense. Though presenting theories that can as well cope with periphrasis and word formation, I did not have much to say about these phenomena. Indeed, these appear to be inherently different from inflection when it comes to recursion: they do permit it, to a certain extent. For recursion in periphrasis cf. Rothstein (2012; 2013a,b) on double futures and the references therein to the wealth of works on double perfects. For recursion in word formation cf., e.g., Brattico et al. (2007).

5 Conclusion

The "Morpheme Debate" (Luís & Bermúdez-Otero 2016) is far from settled and it remains to be seen whether morphemes provide an ultimate argument for morphology as a distinct level of description, organised by paradigms in Stump's

sense. In the present paper I only presented an outline of this debate, not even elaborating on inflectional classes as morphemes. The main point of the paper was showing that even if paradigms are becoming secondary in current theorising, the traditional paradigm in Stump's sense still serves an apparently unique function: it provides an economic way of restricting recursion in inflection. More precisely, the habit of having the rows and columns host different features (and a fortiori different feature values) prevents any given feature value from operating on some former application of itself like in *[*play-ed*]-*ed*.

However, recall that paradigms in Stump's sense are pairings of word forms and the morphosyntactic properties they realise. Thus, an old problem raises its ugly head again, i.e. the very problem with which Haspelmath (2011) is concerned: how can we tell what constitutes a word (form) in the first place? I doubt that the delegation of this task to Canonical Typology (cf. Section 2.3.) is sufficient. The only thing that, in this respect, Canonical Typology can tell us about a given string in a given language is this: it is a canonical word (form) to such and such a degree. However, in order to decide whether the string can realise a paradigm cell, we need to know whether it *is* a word or not, categorically.

Abbreviations

Please note that abbreviations in examples adopted from other authors are spelled out in footnotes throughout.

Example from Turkish in landscape

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Tabea Reiner

1	first person
2	second person
3	third person
F	feminine
DU	dual
GB	Government and Binding Theory (Principles and Parameters)
IMP	imperative
IMPF	imperfective past tense
IND	indicative
IRR	irrealis
L2	second language
MASC	masculine
NEUTR	neuter
NOM	nominative
NUM	number
PL	plural
PRS	present
PS	person
PST	past
PTCP	participle
SAE	Standard Average European (Haspelmath 2001)
SBJV	subjunctive
SG	singular
TNS	tense
V	verb; vowel

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Chapter 6

Redundant indexicality and paradigmatic reorganisations in the Middle Danish case system

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The Danish case system changed profoundly throughout the Middle Danish era. Based on examples from mainly three texts written in East Danish (Scanian dialect), I describe the steps of and stages in these changes and claim that they were caused neither by an unstressed-vowel-neutralising sound law nor by language contact as often assumed, but by various interrelated processes of grammaticalisation. I focus on one of these processes, viz., that the fixed topology of the Middle Danish noun phrase simply made noun-phrase internal agreement by means of case marking redundant and caused the loss of the indexical relations signalling this agreement, which, in turn, contributed to the gradual phase-out of case marking. Moreover, I relate this phase-out to two general linguistic principles, viz. those of markedness agreement (Andersen 2001: 27-37) and single encoding (Norde 2001: 258–261). Finally, based on Nørgård-Sørensen et al. (2011: 5-6) and Heltoft & Nørgård-Sørensen (2015: 262-263) five criteria for what constitutes a grammatical paradigm, I also demonstrate that, irrespective of the existence of some level of free variation, the Middle Danish case system may be described paradigmatically and, correspondingly, that the changes it undergoes constitutes an instance of paradigmatic and thus grammatical change.

1 Introduction

Grammaticalisation as defined by Nørgård-Sørensen et al. (2011: xi, 71–72) and Heltoft & Nørgård-Sørensen (2015: 261-262) equals paradigmatisation. This implies that, in order to count as an instance of grammar, any linguistic phenome-

non must me paradigmatic, and any grammatical change must be describable as a paradigmatic change.

In the present paper, I will account for one type of grammatical and thus paradigmatic change, viz., the change of the case system in Middle Danish of the Scanian dialect from having four fully functional cases to, virtually, none in the nominal paradigm. I shall focus mainly on the changes that happened to the original genitive and dative and the change in relations between these and the accusative, since Jensen (2011) has already effectively accounted for the changes happening to the relations between the original nominative and accusative.

More specifically, I will shed light on one among several factors causing this change, viz., redundancy in the indexical relations of noun-phrase internal agreement, and present the paradigmatic consequences of the changes caused by this and other factors, including in particular the paradigmatic consequence of seemingly free variation in the case system during the period of change. Finally, in tandem with that, I will discuss the consequence of free variation to the aforementioned scholars' understanding of paradigmatic essence.

In order to fulfil these tasks, I will first provide synchronic descriptions of the Middle Danish use of case with examples from Middle Danish texts in Section 2, after which I will seek to explain the developments of the case system by means of processes of grammaticalisation in Section 3. These two sections, which build on – and constitute a concise version of – my previous outline of these matters in Hansen (2021), serve as the starting point for my discussion of the paradigmatic consequences, which will occupy Section 4, while Section 5 will constitute the conclusion of the article.

2 Data from Middle Danish

2.1 Relevant texts

As I have described in detail in Hansen (2021: 2-9) and will now recapitulate here, a comparison of three texts written in the East Danish (Scanian) dialect in the first half of the 15th century, viz., *Skånske Lov* (SkL) after Cod. E don. var. 136, 4°, *Sjælens Trøst* (SjT), and *Søndagsevangelier* (SdE), reveal the existence of multiple simultaneous systems of case application in this period. What follows is therefore a brief outline of the systems found in these texts. For a full description of the details in the systems, see Hansen (2021: 2-9).

2.2 Case marking on both nouns and on typical modifiers

In one system, genitive and dative case is marked on all members of a noun phrase, i.e., both on nouns and on typical modifiers (adjectives, articles, pronouns, numerals and other determiners), in situations with a potential for genitive or dative government.

Marking for dative thus appears both on the possessive pronoun *sinum* 'their' and the noun *thiænarum* 'servants' in (1), where the function of the noun phrase as the indirect object of *budho* 'they commanded' triggers the use of dative, and similarly on both the indefinite pronoun *ene* 'a', the adjective *longe* 'long' and the noun *iærnlenkio* 'iron chain' in (2), where the preposition *mæth* 'with' governs the dative. In the 15th century, this system prevails with the feminine singular and with the (genitive/dative) plural for all genders, but especially in SkL, this system is also found with other case forms, as evidenced by (3) which represents a case of a preposition governing the dative.

(1) SjT: 70[25]
    buth-o   sin-um   thiænar-um
    command-PST.3PL their-M.DAT.PL servant(M)-DAT.PL[1]
    'they commanded their servants [that …]'

(2) SjT: 128[27]
    mæth en-e   long-e   iærnlænki-o
    with a-F.DAT.SG long-F.DAT.SG iron.chain(F)-DAT.SG
    'with a long iron chain'

(3) SkL after E don. var. 136, 4°: 36v
    a   thredi-e   thing-i
    on third-N.OBL.SG moot(N)-DAT.SG
    'on the third moot'

2.3 Case marking on typical modifiers only

A second system is the one found in examples like (4)-(6) where all members of a noun phrase but the typical noun-phrase head, i.e., the noun itself, are marked for case.[2]

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[1]All category labels used in interlinear glossing follow the Leipzig Glossing Rules, the only additions being OBL and C, which signify "oblique" and "commune" (common gender), respectively.

[2]Although nouns do not inflect for case in this system, they still inflect for number; hence, I still need to mark them for inflectional endings as per, e.g., the Ø-ending in (4)-(6).

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(4) SkL after E don. var. 136, 4°: 44v
at andr-u   thing-Ø
at other-N.DAT.SG moot(N)-SG
'at the next/second moot'

(5) SjT: 29[32]
gifv-in   th-øm   fatig-o   folk-Ø
give-IMP.2PL it-ACC.PL poor-N.DAT.SG people(N)-SG
'give them to poor people'

(6) SjT: 122[9]
mæth en-um   stor-um   hær-Ø
with a-M.DAT.SG great-M.DAT.SG army(M)-DAT.SG
'with a great army'

As revealed by a comparison of (3) and the structurally almost identical example (4), at least SkL after E don. var. 136, 4° had some level of apparently free variation between the former system of case marking on all members of the noun phrase and this system of case marking on all members but nouns. Because of this paradigmatic choice, it may also be, however, that the seemingly case-uninflected noun *thing* 'moot' actually does inflect for case, but merely expresses the traditional dative content with the endingless accusative instead of the historically expected dative. Only in a linguistic system with no option left for case marking on nouns may one establish with certainty that an endingless noun is indeed also uninflected.

Examples (5)-(6) stem from SjT, and both display the same system of no case marking on nouns. Here, it seems more certain that the nouns *folk* 'people' and *hær* 'army' are, indeed, uninflected for case, since in this text, singular forms of masculine and neuter nouns ending in a consonant never enter into a paradigmatic opposition with variants that are inflected for case.

On the surface, example (7), which stems from SdE, resembles (4)-(6) by marking for case on typical modifiers only, not on nouns. Here, however, the traditionally dative-governing preposition *met* 'with' suddenly governs the accusative instead. For that reason, the endingless form *renlik* 'cleanliness' in (7) might actually, at least theoretically, have represented the accusative of the noun rather than the noun stripped for case marking, just as with the noun *thing* 'moot' in (4). The second member of this prepositional phrase, i.e., *fasta* 'fasting', clearly represents the form uninflected for case, however, since the accusative would have

been expressed by the oblique form *fasto or *fastæ/faste (with unstressed-vowel neutralisation).

(7) SdE: 42[27]
met lang-en   renlik-Ø   ok fasta
with long-M.ACC.SG cleanliness(M)-(ACC.?)SG and fasting(F):SG
'with long cleanliness and fasting'

The most remarkable feature of (7) is, however, not the status of *renlik* and *fasta* as either accusatives or bare nouns uninflected for case, but the unambiguous use of the accusative in the adjective *langen* 'long'. As I have already mentioned, the preposition *met* 'with' traditionally governed the dative, not the accusative. If this were a standalone example of failure of choosing the historically expected case, I might have dismissed it as a simple error, but seeing that one may come across several structurally similar examples – e.g., (8)-(9) with the preposition *til* 'to', which traditionally governed the genitive – this is hardly the case.

(8) SjT: 32[27–28]
af hørdh-a-na
of herdsman(M)-PL-the.M.ACC.PL
'from the herdsmen'

(9) SjT: 96[18]
til en   hælgh-an   abod-a
to a-M.NOM/ACC.SG holy-M.ACC.SG abbot(M)-OBL.SG
'to a holy abbot'

Rather, the explanation for the use of the accusative in (7)-(9) lies either with prepositions simply allowing accusative government in addition to their traditional government, i.e., *met* 'with' may govern either the accusative or the traditional dative, or with the accusative simply taking optionally over for the dative and genitive in all regards, i.e., so-called participation (Hjelmslev 1935, Hjelmslev 1970: 87, Bjerrum 1966: 8–10, 38–40, Andersen 2001: 46, Heltoft 2010: 16–18, Jensen 2012, among others.). The concept of participation constitutes a typical example of markedness relations. In an opposition between two members of a paradigm, one member is restricted in its functions (in this case: the genitive and the dative), whereas the other member both covers its own restricted functions and may participate in the functions of the first member (in this case: the accusative).

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Needless to say, accusative participation may also constitute an important trigger for the loss of case marking on Middle Danish nouns seen in (4)-(6), since in most nominal classes, the accusative ended in -Ø and was thus formally identical to the bare stem; see also Norde (2001: 250-251) Norde on a similar situation in Old Swedish.

2.4 No case marking

Finally, I have recorded a third – or is it a fourth? – system in Middle Danish in which case marking is neither present on nouns, nor on the typical noun-phrase modifiers, as evidenced by (10)-(11). This is largely reminiscent of the nominal system recorded in modern Danish, which (12)-(13) serve to illustrate.

(10) SjT: 122[9]
     mæth en-Ø   stor-Ø   hær-Ø
     with a-M.SG great-M.SG army(M)-SG
     'with a great army'

(11) SdE: 17[8–9]
     fran all-Ø   køtlik-Ø   lust-Ø
     from all-F.SG corporeal-F.SG lust(F)-SG
     'from all pleasures of the flesh'

(12) Modern Danish
     jeg giv-er   e-t   klog-t   barn   bog-Ø-en
     I   give-PRS a-N.SG wise-N.SG child(N)\SG book-SG-the.C.SG
     'I give the book to a wise child'

(13) Modern Danish
     til e-n   ung-Ø   dreng-Ø
     to a-C.SG young-C.SG boy(C)-SG
     'to a young boy'

I cannot rule out completely, though, that (10) represents not the lack of inflection, but instead a traditional nominative outside of its original domain and with the novel function of marking foreground information (Jensen 2011: 264), but (11) is an unequivocal example of true caseless forms in both the modifier and the noun, as are (12)-(13) from modern Danish.

2.5 Older and younger stages of Danish

When compared to the situation in an older manuscript of SkL (such as Cod. Holm. B 74, 4⁰ from the first half of the 13th century) and to later linguistic stages such as modern Danish, it is evident that what the nominal system undergoes is a development from case marking with the historically expected case on all members of a noun phrase, as in (1)-(3), to no case marking at all, as in (10)-(11).

For instance, as witnessed by (14)-(16), SkL after Cod. Holm. B 74, 4⁰ displays many instances of traditional case marking, even in contexts where traditional case marking would normally not occur on nouns in the 15th century, viz., in the masculine and neuter singular. I have also found examples of accusative participation on the noun as in (17), where the accusative form *brofial* 'plank' replaces the historically expected dative form **brofialu* or **brofialo* (Bjerrum 1966: 39). This form, to which the participating accusative form *brofial* would stand in paradigmatic opposition, is not attested in Cod. Holm. B 74, 4⁰, however, but cf. the dative form *brofiæle* in (18) from an addendum to *Skånske Lov* (Add.SkL), printed in a manuscript (Cod. Holm. B 73) that exhibits neutralisation of some unstressed vowels.

(14)   SkL after Cod Holm. B 74, 4⁰: ch. 145
        til annar-s   thing-s
        to other-N.GEN.SG moot(N)-GEN.SG
        'to the next/second moot'

(15)   SkL after Cod Holm. B 74, 4⁰: ch. 145
        at andr-u   thing-i
        at other-N.DAT.SG moot(N)-DAT.SG
        'at the next/second moot'

(16)   SkL after Cod Holm. B 74, 4⁰: ch. 158
        gifu-ær   andr-um   mann-j   thiuf sac-Ø
        give-PRS.3SG other-M.DAT.SG man(M)-DAT.SG thief case(F)-ACC.SG
        '[if he] accuses another man'

(17)   SkL after Cod Holm. B 74, 4⁰: ch. 142
        ofna brofial-Ø   sinn-j
        on   plank(F)-ACC.SG his-F.DAT.SG
        'in his house'

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(18) Add.SkL: ch. 1
a brofiæl-e   sin-æ
on plank(F)-DAT.SG his-F.DAT.SG
'in his house'

Conversely, the frequency of case marking decreases significantly in a 16th-century post-reformation text such as the first full Danish bible translation, *Christian 3.s danske Bibel* (Chr.3.B) from 1550. Examples (19)-(20) from Chr.3.B illustrate the absence of case marking even in such contexts where case distinctions were kept for the longest time, viz., in the feminine singular and in the plural, respectively.

(19) Chr.3.B: E919 (Luk.II)
ligg-endis   i e-n   krubbe-Ø
lying-PRS.PTCP in a-F/C.SG manger(F/C)-SG
'lying in a manger'

(20) Chr.3.B: E21 (Gen.XII)
met stor-e   plaffue-r
with great-F/C.PL plague(F/C)-PL
'with great plagues'

2.6 Stages in and developments of the Middle Danish case systems

When taking into account both my outline of the situation prior and posterior to the 15th century and the possible steps of and pivots for reanalysis, I may sum up the potential stages in and developments of the Middle Danish case systems as follows.

1. Starting point: Historically expected case on both nouns and typical modifiers

2. Historically expected case on typical modifiers and optional accusative participation on nouns

3. Historically expected case on typical modifiers and no case marking on nouns (excluding the genitival clitic *-s*)

4. Optional accusative participation on typical modifiers and no case marking on nouns (excluding the genitival clitic *-s*)

5. End point: Neither case marking on nouns nor on typical modifiers (excluding the genitival clitic -*s*)

As I have already shown, these systems and subsystems existed side by side within one and the same text. A simple comparison of, e.g., (1), (6), (8) and (10), which all stem from SjT, serves to illustrate this.

3 Explaining the developments of the Middle Danish case system

3.1 Traditional views

Traditionally, two views have prevailed on how the changes in the Middle Danish case system came about, the former generally more accepted – or at least more frequently mentioned – than the latter.

First, viewing the reductions in the Danish case system as a result of sound laws, above all the Danish unstressed-vowel-neutralising sound law *e*/*a*/*o* > [ə], has long been the prevalent position among historical linguists (Falk & Torp 1900: XIV–XV, 16–17, Meillet 1922: 71, 95–100, 113, Skautrup 1944: 266, etc.). This reductionist or "phonology-first" view holds that the coalescence of unstressed vowels (i.e., typically vowels in non-first syllables) resulted in homophony and syncretism of many inflectional endings. Such an explanation may theoretically work not only for Danish, but also for other languages with phonological reductions in non-first syllables; see, e.g., Barber et al. (2009: 167-168) on English.

Second, Wessén (1954: 27) regards Middle Low German influence as (one) reason for the Scandinavian case-system reductions:

> Vi har stor anledning att tro, att det främmande inflytandet har sträckt sig jämväl till ordens böjning och till uttalet. Då fornspråkets rika formsystem mot medeltidens slut upplöses och förenklas, har man med skäl sökt en av orsakerna därtill i att de inflyttade tyskarna aldrig kunde lära sig att rätt bruka de gamla kasusformerna och ändelserna; deras förenklade ordböjning smittade efterhand av på landets egna barn.[3]

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[3]My translation: "We have great reason to believe that the foreign influence has encompassed even the inflection of words and the pronunciation. Since the rich morphological system of the ancient language is dissolved and simplified around the end of the mediaeval period, scholars have reasonably regarded the following circumstance as one of the reasons for that, viz., that the immigrating Germans could never learn to use the old case forms and endings correctly; their simplified inflection gradually rubbed off on the country's own children."

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Although admitting that it is difficult to establish the exact extent of the Middle Low German influence, Haugen (1976: 65) agrees with Wessén by noting that both English and Scandinavian underwent case-system reductions while dominated by other languages and that Low German has a structure similar to that which the mainland Scandinavian languages adopted. Several scholars still include this specific influence or similar types of language contact in their list of causes for the mainland Scandinavian case-system reductions; see, e.g., Norde (2001: 243) on Swedish.

3.2 Challenging the traditional views

Appealing as these two traditional explanations may seem, they suffer from some major deficiencies.

Taking the reductionist view first, the neutralisation of unstressed vowels and the reductions in the case system simply do not seem to be connected. One would expect this sound law to be operational in texts where the case system is in the process of change, but as all the examples from SjT reveal, this is certainly not the case. For instance, (9) shows an instance of accusative where the traditional system would have dictated a genitive, even though both *hælghan* 'holy' and *aboda* 'abbot' preserve the unstressed *-a*, and in (5), *fatigo* 'poor' keeps its unstressed *-o* in spite of the absence of the historical dative singular ending **-i/*-e* on *folk* 'people'. The reductionist view meets the exact same challenge when attempting to explain the case-system reductions in Swedish. As Jensen (2011: 18) points out, the Swedish case system has been reduced and changed to the same extent and more or less with the same result as the Danish one, but Swedish does not display any substantial weakening of unstressed vowels.

SdE also demonstrates the mismatch between the unstressed-vowel-neutralising sound law and the case-system reductions, but in the opposite manner. In SdE, unstressed vowels have been neutralised in many positions, as revealed by, e.g., *langen* (< *langan*) 'long' in (7), but this neutralisation has not prevented a by-and-large retention of the Danish case system, illustrated again by the accusative form *langen* in (7). Following Baechler & Pröll (2018: 4-5), I will stress this point even further by drawing attention to a language like standard German, in which the process of unstressed-vowel neutralisation is just as advanced as in modern Danish despite the preservation of a functional distinction between all four historical cases: nominative, accusative, genitive and dative.

Finally, leaving the possibility of a causal correlation between the unstressed-vowel-neutralising sound law and the case-system reductions aside, this sound

law is not capable of explaining the loss of consonantal endings. Neither the functional changes and subsequent loss of the historical nominative singular ending -*Vr* in the mainland Scandinavian area (Jensen 2011: 18) nor the Faroese and dialectal Norwegian and Swedish loss of the genitive in -*s* (Enger 2013: 6-7) finds any catalyst in reductionist sound laws. To sum up my objections against the reductionist view, I will cite Loporcaro (2018: 42) who concludes on some instances of gender agreement in Italian dialects that "there is no deterministic impact of sound change on morphosyntax."

Turning now to the second traditional explanation of the mainland Scandinavian case-system reductions, i.e., language contact, I will call attention to Ringgaard 1986: 177-182 highly valid objection of a mere chronological mismatch. Followed by Askedal 2005: 2-3 and Enger (2013: 13-14), Ringgaard claims that Middle Low German would exert its allegedly system-changing influence too late on Danish and the remaining mainland Scandinavian languages for it to constitute a factor. The Middle Low German influence was most pervasive in the 14th century, but one may register case-system reductions already in the earliest manuscripts of the Danish regional laws, the language of which may have been settled as early as the end of the 12th century. In all fairness, while Ringgaard's criticism is indeed relevant for Danish, it may be slightly less so for Swedish, for which language Wessén (1954: 27) original postulated his claim.

3.3 Processes of grammaticalisation

Scholars like e.g. Andersen (2010: 143-144), Heltoft (2010); Jensen (2011), and Petersen (2018) offer an alternative to the traditional explanations of the Danish case-system changes. They all attribute certain instances of language change, including those of the Danish case system, to processes of grammaticalisation, which they define as processes of change in the function and contents of the grammatical signs and in the paradigmatic oppositions between them (Andersen 2006, Andersen 2010: 123, Nørgård-Sørensen et al. 2011: xi, 7–8, 11–17, Heltoft & Nørgård-Sørensen 2015: 261–262, etc.).[4]

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[4]By entailing both grammation, regrammation and degrammation (i.e., the rise, change and dissolution of grammar, respectively) and also insisting on syntax (topology and constructions) and syntactic changes forming part of grammaticalisation (Nørgård-Sørensen et al. 2011: 43–45), this definition of grammaticalisation goes beyond the mainstream unidirectionality hypothesis advanced by, e.g., Hopper & Traugott (2003: 7) and Lehmann (1995: 12, 121–123). According to the mainstream definition, grammaticalisation equals the rise of grammar by means of the movement of a linguistic element down the cline of grammaticality, i.e., a unidirectional development of grammar from syntax to morphology going through the stages from content item via grammatical word and clitic to inflectional affix, revealed by accompanying features

For instance, Heltoft (2010: 13-22) describes the changes in the Middle Danish case system as part of a larger process that turns the Old Scandinavian noun phrase into a determiner phrase in the modern mainland Scandinavian languages. Jensen (2011: 201–232, 283–311), in turn, focuses specifically on a reanalysis of the relationship between the nominative and the accusative, resulting in nominatives marking only such subjects and subjective complements that also provide foreground information. Finally, Petersen (2018: e.g. 63–89) connects all the changes mentioned above to the rise of definite and indefinite articles and the subsequent shift in markedness between inflected nouns with and bare nouns without an article as well as to the rise of unity stress. According to Petersen, all these changes form part of the process that gives rise to the concept of incorporation in Danish.

3.4 Redundancy in the indexical relations of noun-phrase-internal agreement

The three grammaticalisation-based approaches to explaining the Danish case-system changes mentioned in Section 3.3 by no means contradict each other. On the contrary, they complement each other, each contributing one important factor to the complex overall explanation of the systemic changes. Neither do they provide the full explanation, however. As I have advocated for in Hansen (2021), one additional factor must be added, viz., an apparent desire among the language users for eliminating redundancy in noun-phrase internal agreement as evinced by, e.g., the mere existence of the Middle Danish case-system stages 3–4 in Section 2.6[5]

Most grammaticalisation-based explanations of the case-system changes focus on noun-phrase-external relations and functions of case marking. For instance, Jensen (2011) regards the functional change of the historical nominative from

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such as phonetic reduction, increased syntactic bonding, desemanticisation, use in new contexts and increasing frequency. As a consequence of the definition by Nørgård-Sørensen et al. (2011) etc. of grammaticalisation as processes of change in the function and contents of the grammatical signs and in the paradigmatic oppositions between them, their type of grammaticalisation cannot limit itself to such a change from syntax to morphology, but must comprise also, e.g., the rise of morphologically and/or syntactically expressed grammatical sign oppositions from a reanalysis of formerly lexical items (grammation) and restructurings of existing morphologically and/or syntactically expressed grammatical oppositions (regrammation). Such regrammations may also comprise changes from morphological to syntactic expression of grammatical content oppositions (as in the grammaticalisation processes suggested in the present article) and not only changes from syntactic to morphological expression as per the limitations of the mainstream unidirectionality hypothesis.

[5]See also Section 3.5 on the application of Norde (2001: 258–261) principle of single encoding.

marking subjects and subjective complements to signalling foreground informa-
tion as a decisive factor. However, although the primary function of case marking
is, indeed, noun-phrase external in terms of 1) indexical reference to the valency
of a predicate (i.e., revealing the argument status of the noun phrase in question)
or to the government of an adposition and 2) symbolic reference to location, di-
rection, means, etc. (Blake 2004: 1080–1086, Andersen (n.d.): 2), Heltoft 2019: 154–
155), case may also point indexically within the noun phrase. This is what creates
noun-phrase-internal or endophoric agreement, i.e., that multiple members of a
noun phrase inflect identically (on the functional level; the formal expression
of the endings may differ) and point indexically to each other (Andersen (n.d.):
2), Haspelmath 1996: 52, Nielsen 2010: 82); see also Nielsen (2010: 86–89) on the
general principle of what he labels *conditioned agreement*).[6]

Example (21) serves to illustrate this double function of case marking. Please
note both the noun-phrase-external relations, because the noun phrase *ondom
quinnom* 'evil women' in the dative points indexically to the dative-governing
preposition *for* 'against', and the noun-phrase-internal or endophoric agreement,
because the dative ending *-om* of *ondom* 'evil' and *quinnom* 'women' point index-
ically to each other, signalling that they belong together as members of the same
noun phrase.

(21)   SjT: 52[28]
       for ond-om   quinn-om
       for evil-F.DAT.PL woman(F)-DAT.PL
       'against evil women'

This type of noun-phrase internal agreement may be instrumental for lan-
guage users when they attempt to group individual words of a sentence together
in phrases, but this would hold true mostly for languages where a fixed topology,
including juxtaposition of constituents belonging to the same phrase, is not the
general rule. For instance, in (22), the noun phrases *contiguās domōs* 'neighbour-
ing houses' and *altam urbem* 'upper city' are separated by other constituents
(Andersen n.d.: 2, Nielsen 2010: 89–93), and readers of that sentence must there-
fore rely heavily on case marking in order to group the words together correctly.

(22)   Latin

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[6]For an outline of the general distinctions between symbolic and indexical sign relations, see An-
dersen (1980: 4–5, 27–30), Andersen (2010), Andersen (n.d.) with further reference to Peircean
sign theory.

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> contigu-ās   tenuere   dom-ōs,   ubi   dīcitur
> neigbouring-F.ACC.PL they.lived house(F)-ACC.PL where is.said
> alt-am   coctil-ibus   mūr-is   cinxisse
> high-F.ACC.SG bricked-M.ABL.PL wall(M)-ABL.PL to.have.surrounded
> Semīram-is   urb-em
> Semiramis(F?)-NOM.SG city(F)-ACC.SG
>
> 'they lived in neighbouring houses where Semiramis is said to have
> surrounded the upper city with brick walls'

In languages with a fixed topology and with juxtaposition of constituents that belong together, this type of noun-phrase internal agreement becomes redundant. As Diderichsen (1941: 93–107) has demonstrated, Middle Danish is such a language, at least when it comes to noun-phrase-internal topology. Juxtaposition is standard in the Middle Danish noun phrase, and the position of the modifiers (pre-head or post-head) follows from a set of fixed rules that I may sum up as follows.[7]

1. Modifier in pre-head position: Determiners (numerals, quantitative adjectives and indefinite pronouns) as well as characterising or emphatically used adjectives and possessive pronouns

2. Modifier in post-head position: Simple descriptive adjectives, adjectival appositions, participles equivalent of subordinate clauses, "superfluous"[8] possessive pronouns, and partitive genitives

Hence follows that the Middle Danish case-marking system is redundant in one of its two functions, viz., noun-phrase-internal agreement, leaving noun-phrase-external reference as its sole non-redundant function. In actual fact, noun-phrase-internal agreement is marked in three ways: (1) by juxtaposition and fixed rules of noun-phrase-internal topology, (2) by morphological case marking, and (3) by morphological marking of gender and number. One could reasonably argue, therefore, that Middle Danish displays double redundancy in noun-phrase-internal agreement. In light of this triple marking or double redundancy, it is

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[7]For an elaborate presentation of these rules, see Diderichsen (1941: 93–107) and Hansen (2021).

[8]This term and the examples given in this footnote stem from Diderichsen (1941: 100, 206). Superfluous possessive pronouns comprise cases such as *faþær sin* 'his/her father', *kuna sin* 'his wife', *barn sit* 'his/her wife' where the possessor is self-evident from the context and can easily be left out as in *at barn uar føt æftir faþur*, lit. 'that child was born after father' with omission of *sin* 'his'.

hardly surprising that one of the ways of marking this agreement, viz., case marking, would become prone to loss, as evidenced by stages 2–5 in Section 2.6

Figure 1–Figure 6 express the loss that happened in terms of grammatical sign relations and changes in these relations, referring concretely to the prepositional phrase *for ondom quinnom* 'against evil women' in (21). Figure 1[9] illustrates the traditional representation of the original situation with morphologically marked case on every member of the noun phrase.

	P	NP-MOD		NP-HEAD	
Content	'for'	'evil'	DAT	'woman'	DAT
	↑	↑	↑	↑	↑
Expression	*for*	*ond-*	*-om*	*quinn-*	*-om*
	Pos. 1	Pos. 2/3 (not coinc.)		Pos. 2/3 (not coinc.)	
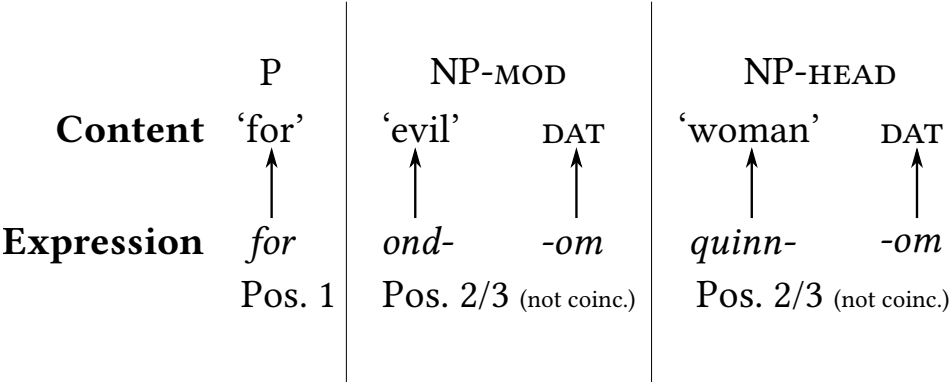
Figure 1: Symbolic and indexical sign relations morphologically expressed (case focus only)

As I have already shown, however, topology also plays a decisive role in the marking of noun-phrase-internal agreement, to which point I will add that the order of constituents within a prepositional phrase like *for ondom quinnom* 'against evil women' is also fixed: preposition first, noun phrase second (Diderichsen 1941: 109). In order to illustrate the grammatical relations in further detail, I will therefore need to add an additional topological layer to the presentation of Figure 1, for which see Figure 2, where thicker arrows represent topologically marked relations, and thinner arrows those that are morphologically marked.

So far, the model does not reveal much about the claimed redundancy in noun-phrase internal agreement. In order for that to be illustrated as well, I will need to extent the model even further. Figure 3 therefore adds morphologically marked indexical relations, including such that represent noun-phrase-internal agreement, and Figure 4 is even further augmented with those indexical relations that

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[9] All figures and tables: CC-BY-NC 3.0 Bjarne Simmelkjær Sandgaard Hansen. In Figure 1–Figure 6, the label "not coinc." stands for "not coincidental", referring to the noun-phrase-internal position of the head and the modifier not being coincidental, but governed by a set of fixed rules (Diderichsen 1941: 93–107).

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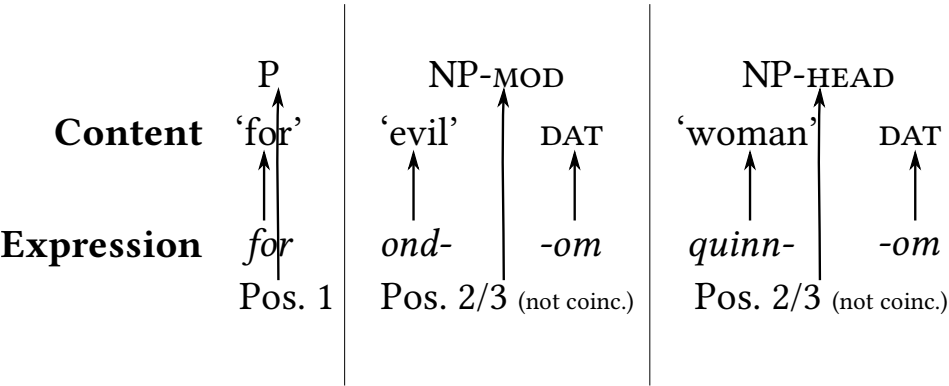
Figure 2: Symbolic and indexical sign relations morphologically and topologically expressed (case focus only)

are topologically marked. Full lines in blue colour represent symbolic relations (as in Figure 1–Figure 2 above), whereas dotted lines in red represent indexical relations. As illustrated especially in Figure 4, both the noun-phrase-internal agreement and the noun-phrase external relations to the preposition are doubly marked, viz., both morphologically and topologically. One of these layers, the morphological one, is therefore dispensable and subject to gradual phase-out by the language users.
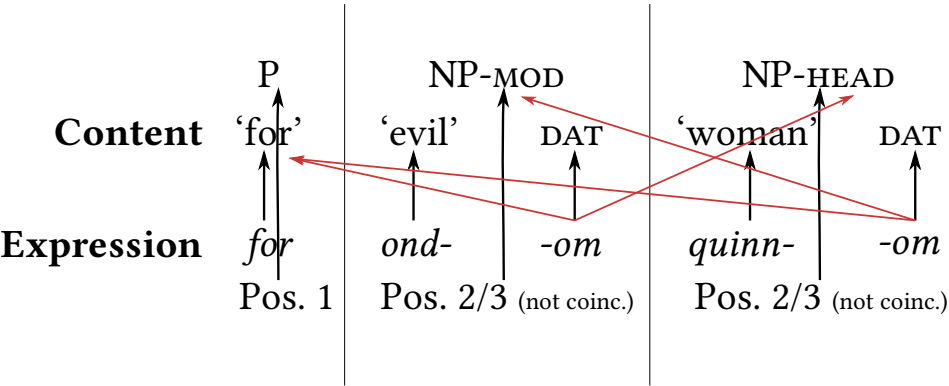
Figure 3: Symbolic and indexical sign relations morphologically expressed (case focus only)

Figure 5 below illustrates the grammatical relations in my model with the morphological level (i.e., marking by means of case) phased out. It has now become
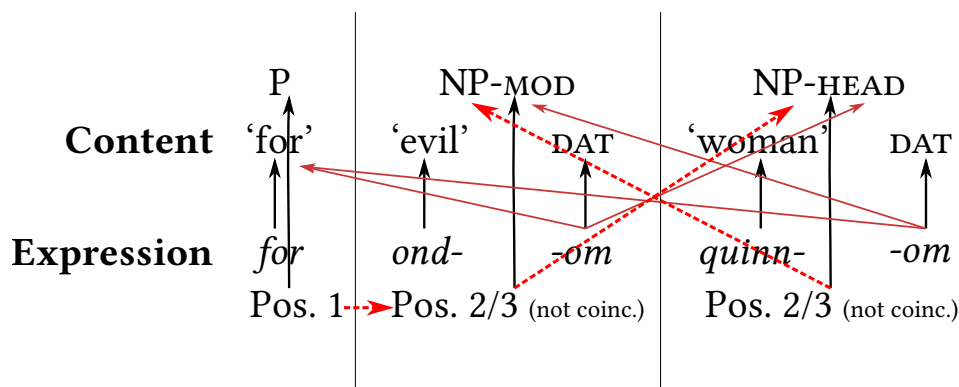
Figure 4: Symbolic and indexical sign relations morphologically and topologically expressed (case focus only)

evident that the topological level alone is fully capable of marking both the noun-phrase-internal agreement and the noun-phrase-external relations to the preposition. In other types of situations, e.g., when a noun phrase originally marked for dative did not form part of a prepositional phrase with a dative-governing preposition, but functioned as an indirect object, the topological level would be capable of marking noun-phrase-internal agreement only, seeing that the Middle Danish topology is not fixed on the level of sentential constituents.
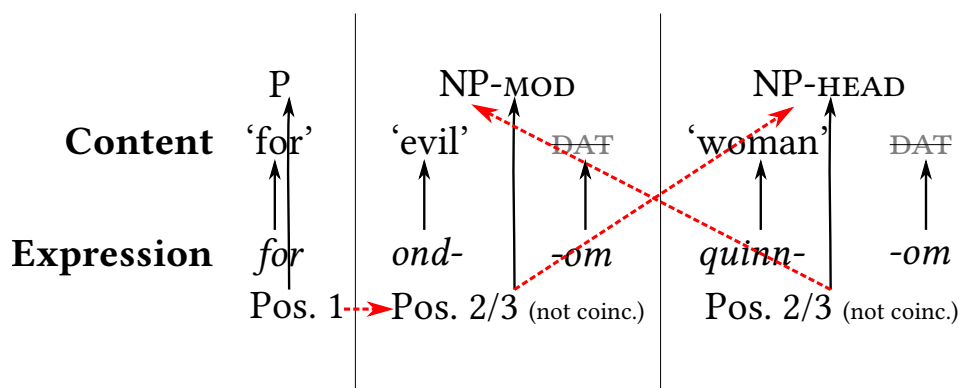
Figure 5: Symbolic and indexical sign relations morphologically and topologically expressed after the removal of case inflection (case focus only)

Despite what one may have deduced and thus been led to believe from the

model in Figure 1–Figure 5 so far, one must not forget that, even after the loss of case marking, noun-phrase-internal agreement is still marked in two ways, viz., by juxtaposition and fixed rules of noun-phrase-internal topology and by morphological marking of gender and number. Redundancy thus remains, but only singly, not doubly as in the original system prior to the loss of case marking. Figure 6 serves to illustrate that, besides expressing the number and gender of the elements of a noun phrase symbolically, number and gender marking also express indexical relations within the noun phrase, i.e., noun-phrase-internal agreement.
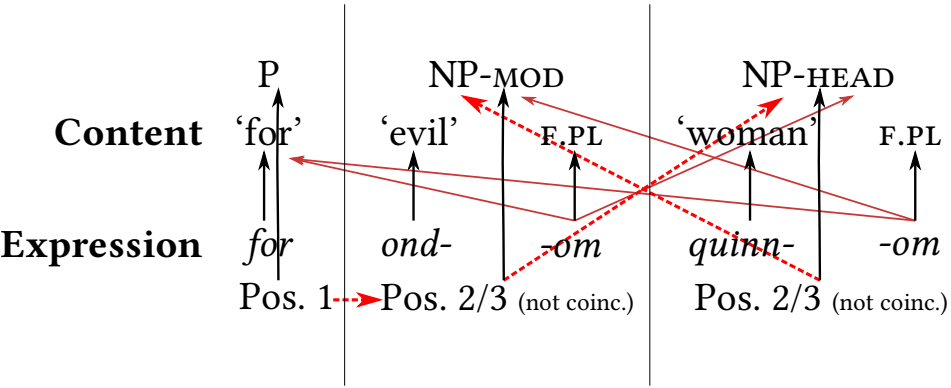
Figure 6: Symbolic and indexical sign relations morphologically and topologically expressed after the removal of case inflection (case focus only)

3.5 Gradual abandonment of case marking

In Section 3.4, I presented one of the factors that motivated the Middle Danish case-system changes, viz., redundancy, but it remains unexplained so far why the language users simply did not remove such redundancy at once, but did it gradually instead. In what follows, I will therefore outline why case marking remained longer in the feminine singular and in the plural than in the masculine and neuter singular, and longer, too, on typical modifiers than on nouns.

Andersen (2001: 27-37) principle of markedness agreement may account for some of this asymmetry. According to this principle, elements that are marked similarly behave identically. Marked forms behave in the same way as other marked forms, and unmarked forms in the same way as other unmarked forms. When it comes to linguistic change, Andersen (2001: 36) claims that one would expect

> […] the innovation to occur earliest in environments with equivalent marked-ness value and to subsequently gain ascendancy first in such contexts and then, as it loses its novelty, in the complementary contexts with opposite markedness value.

This corresponds well to the Middle Danish situation, where the case-system innovations occur first in the unmarked environment, i.e., in nouns (Andersen 1980: 44) and in the masculine and neuter singular. The marked environments, i.e., the non-substantival nominal parts of speech, the feminine singular and the plural, keep case marking longer.

One additional factor that may account for the marking of case on only one (type of) noun-phrase member, viz., the typical modifiers, at the intermediate steps of the Middle Danish development (represented by stages 3–4 in Section 2.6) may be the application of a principle of single encoding (Norde 2001: 258-261). This principle, which entails that noun phrases, for instance, only inflect for case once and not on every single (type of) noun-phrase member, also operates in the well-known way of marking case in German noun phrases. Here, only one noun-phrase member distinguishes fully for case, while the remaining case markers remain underspecified. In (23), for instance, case is expressed explicitly only on the adjective, leaving the indefinite article underspecified, whereas in (24), case is expressed explicitly only on the definite article, leaving the adjective under-specified.

(23) German
    ein-Ø   gut-**er**   Mann
    a-M.NOM.SG good-M.NOM.SG man(M).SG
    'a good man'

(24) German
    de-**r**   gut-e   Mann
    the-M.NOM.SG good-M.NOM.SG man(M).SG
    'the good man'

Returning to the application of this principle in the Middle Danish noun phrase, one may attribute the preference for inflection on typical modifiers over inflection on nouns to the circumstance that the adjectival and pronominal paradigms historically contain more and clearer distinctions than the nominal paradigm.

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4 Paradigmatisation

4.1 Theoretical viewpoint

Now that I have described and explained some of the possible reasons for the Middle Danish case-system changes, it is not only interesting, but also necessary to witness their paradigmatic consequences. As mentioned briefly in Section 1, I follow the theoretical viewpoint of Nørgård-Sørensen et al. (2011: xi, 71–72) and Heltoft & Nørgård-Sørensen (2015: 261–262) that grammaticalisation equals paradigmatisation, meaning that one cannot have grammar and changes in grammar without also having paradigms and changes in paradigms; see also Diewald & Smirnova (2010: 2-4). Consequently, in accordance with this theoretical viewpoint, the changes of the Middle Danish case system described in Section 2 and explained in Section 3.3-Section 3.4 cannot be grammatical changes unless they can be formalised paradigmatically.

In Nørgård-Sørensen et al. (2011: 5-6) and Heltoft & Nørgård-Sørensen (2015: 262-263) understanding of what constitutes a grammatical paradigm, any grammatical paradigm must meet five criteria. First, they state, it must be closed, in principle, thus containing only a fixed number of members. Second, it must be possible to specify the domain of the paradigm, i.e., the syntagmatic context to which the paradigm applies. Third, in close correspondence with the domain introduced by the second criterion, any paradigm must have a semantic frame within which the content of the specific members of the paradigm is defined. In other words, the semantic frame reveals what type of oppositions the members of a paradigm serve to express. Fourth, the choice between the members of the paradigm is obligatory, meaning that, when producing an utterance that activates the domain of a grammatical paradigm, the language users cannot avoid choosing one of its members. Fifth and finally, grammatical paradigms tend to be asymmetric and thus to automatically distinguish between marked and unmarked members, the latter being the one without a specific semantic load. For that reason, the unmarked paradigm member may sometimes participate in the functions of the other, i.e., the marked, members; see also Section 2.3 for a further discussion of and references to the concept of participation.

4.2 Paradigmatic consequences of the Middle Danish case-system changes

The question to be answered now is how the notion of a paradigm outlined in Section 4.1 fits the data presented in Section 2 and analysed in Section 3.3-Section 3.4.

In order to answer this question, I will first attempt to set up a paradigm of the original Middle Danish case system with historically expected case on both nouns and typical modifiers (represented by stage 1 in Section 2.6) in Table 1, the focus of which lies on the paradigmatic opposition between the accusative and the dative. Similar and more extensive tables may be set up for the inclusion of the nominative and the genitive, but for the sake of clarity, the accusative-dative opposition will suffice.

This paradigm contains a syntagmatic domain (Middle Danish noun phrases consisting of a modifier and a noun), a semantic frame ("case", i.e., indexes of noun-phrase external government as well as noun-phrase-internal agreement) and a closed set of case endings as its members.[10] In addition, the language users cannot avoid choosing between an accusative and a dative ending in utterances relevant to this opposition.

Table 1 reveals that the accusative consistently marks historical accusative contexts, and dative the historical dative contexts. Consequently, no overlapping occurs between the accusative and the dative in this system.

Table 1: Paradigmatic visualisation of the system of historically expected case marking both on nouns and on typical modifiers

Domain	Noun phrases (examples here: modifier + noun)	
Frame	"Case", i.e., indexes of government (noun-phrase-externally) + agreement (noun-phrase-internally)	
Content	Indexes of historical accusative contexts (direct-object/object-complement government, prepositional government, etc.)	Indexes of historical dative contexts (indirect-object government, prepositional government, etc.)
Expression	Modifier-ACC + noun-ACC --- Ex.: *(vith) swa ohørlig-a synd-Ø* 'against a sin this unheard-of'	Modifier-DAT + noun-DAT --- Ex.: *(at) andr-u thing-i* 'at the next/second moot'

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[10]Please note that the expressional label ACC covers a wide array of endings from different inflectional classes such as *-an* (adjectival M.ACC.SG), *-a* (masculine *n*-stem noun ACC.SG) and *-Ø* (vowel-stem noun ACC.SG), while DAT covers endings such as *-u* (feminine *n*-stem noun DAT.SG or adjectival N.DAT.SG), *-i* (adjectival F.DAT.SG or masculine *a*-stem noun DAT.SG) and *-um/-om* (DAT.PL).

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As I mentioned in Section 3.4, the Middle Danish noun-phrase-internal word order was fixed even at the earliest attested stage of Middle Danish when the application of this historical case system was most widespread. In order to illustrate the grammatical potential of this topological system, I have entered it into a paradigm, as well, as represented by Table 2.

Table 2: Paradigmatic visualisation of the Middle Danish predictability of noun-phrase-internal topology

Domain	Noun phrases (examples here: modifier + noun)	
Frame	Type and function of modifier + agreement/mutual connection (noun-phrase-internally)	
Content	Determiners (numerals, quantitative adjectives and indefinite pronouns) + characterising or emphatically used adjectives and possessive pronouns	Simple descriptive adjectives, adjectival appositions, participles equivalent of subordinate clauses, "superfluous" possessive pronouns and partitive genitives
Expression	Position X = MODIFIER POSITION Y = HEAD --- Ex.: *andru thingi* 'the next/second moot'	Position X = HEAD POSITION Y = MODIFIER --- Ex.: *børnum sinum* 'his children'

So far, both tables have represented clear-cut grammatical paradigms with no vacillation between the members. However, the paradigmatic representation attempted in Table 1 of each stage in a separate paradigm does not depict the actual situation, since all the case-system stages of Section 2.6 actually do occur within one and the same text; cf. again, e.g., (1), (6), (8) and (10), which all stem from SjT and may reveal up to four competing systems. Focusing on the many different ways to express indexes of historical dative contexts, one may therefore be tempted to produce a paradigm like that of Table 3 to check if it would constitute a more precise rendition of the actual situation.

This representation creates an entirely novel issue, viz., the introduction of free choice within the paradigm. Admittedly, the existence of a free choice need not necessarily violate Nørgård-Sørensen et al. (2011: 5-6) and Heltoft & Nørgård-Sørensen (2015: 262-263) fourth criterion that the choice between the members of a paradigm is obligatory, for, as they further state (Nørgård-Sørensen et al.

Table 3: Attempt at a paradigmatic visualisation of four competing case-system stages in noun phrases based on the content of indexing historical dative contexts

Domain	Noun phrases (examples here: modifier + noun)			
Frame	"Case", i.e., indexes of government (noun-phrase-externally) + agreement (noun-phrase-internally)			
Content	Indexes of historical dative contexts (indirect-object government, prepositional government, etc.)	Indexes of historical dative contexts (indirect-object government, prepositional government, etc.)	Indexes of historical dative contexts (indirect-object government, prepositional government, etc.)	Indexes of historical dative contexts (indirect-object government, prepositional government, etc.)
Expression	Modifier-DAT + noun-DAT	Modifier-DAT + noun	Modifier-ACC + noun	Modifier + noun
	---	---	---	---
	Ex.: *sin-um thiænar-um* 'their servants'	Ex.: *(mæth) en-um stor-um hær* 'with a great army'	Ex.: *(af) hørdh-a-na* 'from the herdsmen'	Ex.: *(mæth) en stor hær* 'with a great army'

2011: 5, "[t]his choice may be free or bound, but will ultimately be determined by the content of the forms constituting the paradigm."

In this statement lies the real problem with the paradigm of Table 3. Even though it seems to contain a domain, a frame, a closed set of members and an obligatory, yet free choice, it does not entail an opposition of content, unless one may assume that the content opposition is one of indexing variation within the language users' personal register, i.e., within the language users' range of varieties between which they may choose at different times (Halliday 1994: 77).[11] If such a register-focused content opposition is not present, this paradigm is invalid,

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[11]I am greatly indebted to Henning Andersen for pointing this possibility out to me during the discussion round at the SLE workshop "Paradigms regained" where I first gave the presentation upon which this article is based.

for a grammatical paradigm opposes grammatical signs, i.e., linguistic units consisting of both a content side and an expression side. In other words, the absence of a content opposition equals the absence of a grammatical opposition, which, in turn, equals the absence of a paradigmatic opposition. In that sense, what we are facing here may rather be a case of allomorphy in its broadest sense than a case of paradigmatic opposition.[12]

Notwithstanding any considerations on allomorphic variation, a more effective way of presenting the paradigm in question would be that of Table 4, which reintroduces the content opposition between expressing indexes of historical accusative and historical dative contexts. Here, it becomes evident that what seems to be (and is indeed) free variation between different ways of expressing indexes of historical dative contexts also represents an instance of difference in markedness relations, i.e., the fifth criterion of Nørgård-Sørensen et al. (2011: 6) and Heltoft & Nørgård-Sørensen (2015: 263). The option for using historical accusative forms or uninflected forms in historical dative contexts simply follows from the general unmarkedness of these forms; see again Section 2.3 on accusative participation. In contrast to that, the historical dative forms remain marked and are applicable only in their original contexts. What Table 4 does not reveal, however, is the relative markedness of the accusative forms and the uninflected forms, since the rendition of such a distinction would require the inclusion of a larger set of data and forms (the nominative and the genitive), which lies outside the scope of the present article.

5 Conclusion

In this article, I have analysed linguistic data from mainly three Middle Danish texts with respect to case use and presented a development of the Middle Danish case system divided into possibly five stages:

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[12]Whether we may really label an apparently free choice between ways of expressing indexes of historical dative contexts a case of allomorphy depends on our definition of this term. As Bauer (2003: 17, 113–114) points out, the prototypical allomorph is a phonologically, grammatically or lexically conditioned variant of the same morpheme. Consequently, we could regard the different realisations of the historical Middle Danish dative singular ending in nouns as grammatically (gender) or lexically (inflectional class) conditioned allomorphs of a morpheme that expresses indexes of historical dative contexts; see fn. 10 for examples of these different realisations. Since the choice presented in Table 3 is free rather than phonologically, grammatically or lexically conditioned, we should be able to rule out allomorphy here, at least in its prototypical sense. Bauer (2003: 113-114) adds, however, that in a broader context, allomorphs may be conditioned by the choice of register as in the choice between the English plural forms *tempos* and *tempi*. If we accept this expansion of the definition of allomorphy, we would be able to regard it as a case of allomorphy.

Table 4: Paradigmatic visualisation of four competing case-system stages in noun phrases with the inclusion of markedness differences For the sake of visual clarity, the focus of this table lies specifically on the marking of case on typical noun-phrase modifiers.

Domain	Noun phrases (examples here: modifier + noun)	
Frame	"Case", i.e., indexes of government (noun-phrase-externally) + agreement (noun-phrase-internally)	
Content	Indexes of historical accusative contexts (direct-object/object-complement government, prepositional government, etc.)	Indexes of historical dative contexts (indirect-object government, prepositional government, etc.)
Expression	Modifier-ACC + noun	Modifier-DAT + noun(-DAT)
	---	---
	Exx.: *(vith) swa ohørlig-a synd-Ø* 'against a sin this unheard-of', *(af) hørdh-a-na* 'from the herdsmen'	Exx.: *sin-um thiænar-um* 'their servants', *(mæth) en-um stor-um hær* 'with a great army'
	Modifier + noun	

	Ex.: *(mæth) en stor hær* 'with a great army'	

1. Starting point: Historically expected case on both nouns and typical modifiers

2. Historically expected case on typical modifiers and optional accusative participation on nouns

3. Historically expected case on typical modifiers and no case marking on nouns (excluding the genitival clitic *-s*)

4. Optional accusative participation on typical modifiers and no case marking on nouns (excluding the genitival clitic *-s*)

5. End point: Neither case marking on nouns nor on typical modifiers (excluding the genitival clitic *-s*)

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I have demonstrated that the Middle Danish case-system changes result neither from reductionist sound laws, nor from linguistic simplification due to language contact. Rather, various processes of grammaticalisation, i.e., processes of change in the function and contents of the grammatical signs and in the paradigmatic oppositions between them, are responsible of the changes. One of these processes is the change from double to single redundancy in noun-phrase-internal agreement. After the fixation of noun-phrase-internal topology had rendered the use of case for expressing noun-phrase-internal agreement superfluous, this type of indexical reference was phased out gradually in general accordance with both Andersen (2001: 27-37) principle of markedness agreement and Norde (2001: 258-261) principle of single encoding.

Based on Nørgård-Sørensen et al. (2011: 5-6) and Heltoft & Nørgård-Sørensen (2015: 262-263) five criteria for what constitutes a grammatical paradigm, I have also shown that the Middle Danish case system may be described paradigmatically and, correspondingly, that the changes it undergoes constitutes an instance of paradigmatic change. The existence of an intermediate transitional period with competition and seemingly free variation between different Middle Danish case-system stages does not challenge this claim, since these stages do not only represent free variation, but also an instance of difference in markedness relations, i.e., the fifth criterion of Nørgård-Sørensen et al. (2011: 6) and (Heltoft & Nørgård-Sørensen 2015: 263).

After subjecting the Middle Danish case-system changes to this paradigmatic test, I dare now claim that the changes in the Middle Danish case system are indeed grammatical changes – and thus represent a process of both grammaticalisation and paradigmatisation – in Nørgård-Sørensen et al. (2011: xi, 71–72) and Heltoft & Nørgård-Sørensen (2015: 261-262) sense.

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Chapter 7

The semantic reorganisation of case paradigms and word order paradigms in the history of Danish

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This article is a study of the relation between the paradigmatic organisation of case and the paradigmatic organisation of word order in late Middle Danish (1300-1500) and in Modern Danish. A content analysis of these paradigms shows a typological difference, even if the older pronominal case system looks exactly like the modern system. Middle Danish preserves inactive (impersonal, traditionally) constructions with an inactive argument 1, and at this stage, the dimensions of case, position, argument hierarchy and subjecthood (still) combine freely. The case system is still indexical. The alignment of subjecthood, status as argument 1, position and nominative case with symbolic meaning is a development of post-Reformation Danish.

1 Introduction

It is no surprise that a morphological category like case should be organised in paradigms, since this usage of 'paradigm' has been current since antiquity. It may come as more of a surprise that a syntagmatic aspect of language like word order can have paradigmatic organisation; yet, this refers to contrasts of meaning between word order patterns and is therefore not a new idea either, but rather a neglected aspect of language. What I will try to add, is the possibility of co-organisation between morphological content and alternating constructional organisation. Case meaning can interact with constructional hierarchic organisation of arguments, forming what could be called second-order paradigms

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(or hyperparadigms), see Christensen (2007); Nørgård-Sørensen et al. (2011); Juul Nielsen (2016).

After Section 1.1-Section 1.2, I present in Section 2 the system of Middle Danish inactive constructions in some detail, including important differences from the parallel West Norse (Old Icelandic) system. Section 3 deals with the paradigmatic organisation of case in its interplay with transitive and inactive. The function of case is to point to the governing verb and thus to determine the semantic role value of the arguments. Section 4 documents that topology (word order) is not included in these constructional paradigms, since there are no positions reserved for subjects and objects. This is very different from the system of present-day Danish, with specific positions for subjects and objects Section 5 and a case system that has lost its coding of semantic roles.

Some readers may find it easier to skip initially Section 2.2-Section 2.5 and go directly to the overview in Section 2.6 and then on toSection 3, to return later to the details of the data in Section 2.

1.1 Inactive constructions

A central problem in the analysis of case morphology in constructional contexts lies in its function in so-called impersonal constructions, in my terminology inactive[1] constructions, as in (1)-(2).[2]

(1) om thek   wærkær   i howæth oc i thinninge, Tha tac thæn
     um thik$_{A1}$ værk-er   i hoveth ok i thinninge, tha tak thæn
     if 2SG.OBL ache-PRS.SG in head   and in temples, then take the
     'If your head and temples are aching, then take the ...' (AM 187, 3, 3-4)

(2) Hwy angher tik   ey nw, at   thu haffwer illde giorth
     hvi angrer thik$_{A1}$ æj nu [at thu haver   ille gjorth]$_{A2}$
     why repent 2SG.OBL not now that you have   done wrong
     'Why do you not repent now that you have done wrong?' (ML 57, 16-58, 1)

Example (1) has a one-place predicate *thik* 'thee', in the oblique case, manifesting the semantic role Inactive. Since this role is basic to this constructional paradigm, I name the Inactive argument A1, the primary argument.

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[1] *Inactive construction* bears resemblance to the contrast between active features and inactive features in so-called active languages, cf. Lehmann 1989; 1993. When the *active voice* is meant, I will be explicit about this and simply write 'active voice'.

[2] Line two is rendered in the normalised orthography of the collections of the Old Danish Dictionary, see Section 6.

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Argument hierarchy reflects basic semantic choices. The Inactive role applied to the A1 of this construction excludes agentive meaning, as also emphasised by Faarlund (2001; 2004) for Old Icelandic. Agentive meaning is characteristic of transitivity, and neither (1) nor (2) can convey agentive meaning.

Examples (1)-(2) show a difference in valence within inactive constructions. Example (2) is a two-place predicate, the A1 is again *thik*, likewise in the oblique case, manifesting a variant of the inactive role, what other case grammarians have called the Experiencer role; here, the A2 is an embedded clause: *at thu haver ille gjorth*, denoting the content of the mental impact on the referent of the A1. Halliday (1994) speaks of this semantic role as the Phenomenon role.

The term A2 reflects an extension of the construction, possible with certain verbs.

The paradigmatic organisation of inactive constructions will be laid out in Section 3, esp. Section 3.3. I will not go into details here, since a clear exposition will call for a comparison with especially transitivity and other organisation principles. But it must be pointed out now that argument hierarchy reflects the semantic valence of predicates, and this differs from the level of sentence members and thus from the grammatical functions subject and direct object. In principle, the subject function can apply to either A1s or A2s, and similarly, direct objects to either A1s or A2s. Again, this means that one should not just assume that one of these levels can reduce to one of the other levels, for instance of subjects to A1s. On the contrary, a claim that these levels are or have been aligned, must be the outcome of the application of empirical criteria and cannot be taken for granted a priori.

The A1s of (1) and (2) have the oblique form, and this is of course a case of what other traditions call oblique subjects (among many others Allen 1995; Barðdal & Eyþórssson 2003; 2018; Eyþórsson & Barðdal 2005; Kiparsky 1997). The analysis of oblique case subjecthood has been advocated for many older Indo-European languages by esp. Jóhanna Barðdal and Þórhallur Eyþórsson. I shall not in this context discuss their views in detail, nor will I refer to the sometimes-polemic discussions between different positions. Barðdal and Eyþórsson have a specific definition of subject as a starting point, namely the identification of subject and A1. As they see it, the A1 is the subject, or rather, the universal definition of a subject is taken to be the status as an argument 1.

One potential subject definition that we have used as a working definition since Eyþórsson & Barðdal (2005), is to view the first argument of the argument structure as being the syntactic subject (Barðdal & Eyþórssson 2018: 263).[3]

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[3]The following quotation will illustrate their view: "The reason that we have proposed such a

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A discussion of their subject criteria and of similar approaches (e.g. Sigurðsson 1989) and the way they are operationalised[4] must be the topic of another article (Heltoft 2021b).

In the hierarchical-linear configurations of generative grammar, such reductional notions of a subject will always come out as a Specifier of something, normally generated as a Vp-specifier, next upgraded to I-Spec, or for V2-languages, all the way to C-Spec. This presupposition, that the subject holds the upmost position, inherently linear and hierarchical at the same time, is shared also by linguists (esp. Kiparsky 1997) who try to combine and reconcile syntax and morphological case by ascribing syntactic features to the arguments and case features to morphology, and thereafter, working out unification procedures for the respective feature clusters. Kiparsky refers to Cynthia Allen for the insight that Old English had IP available as a category since "it had dative subjects, in the sense that oblique experiencers were structurally parallel with nominative subjects" , interpreting this as "at least a *prima facie* indication of Spec-IP positioning" (Kiparsky 1997: 12). Behind this, we also find the identification of subject and A1, meaning that A1 is the hierarchically upmost argument. Instead of this assumption, as mentioned in Section 1.1, I hold that argument hierarchy should be seen as organised by valence, see further Section 2.

Of course, the sign-oriented approach adopted here determines part of what is possible. Sign-oriented grammars such as Croft (2001), Danish Functional Grammar (Engberg-Pedersen et al. 1996), Traugott & Trousdale (2013) must respect the sign limits delineated by the expression side and must therefore seek for models that do not presuppose reduction attempts of Inactive A1s to underlying subjects across the sign boundaries.

I will return to the importance of linearity in Section 4, but the road to there will go via an analysis of the structure and function of simple traditional case paradigms like the ones behind examples (1) and (2), consisting of oppositions of number, deixis and a case distinction of just two: nominative and oblique.[5]

Apart from orthography and sound change, and a few later shortenings (of *hanum* to *ham*, *ither* to *jer*), the expression system of Table 1 is exactly the same

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subject definition is that when generalizing across the subject tests, we have found that it is always the first argument of the argument structure that is targeted by the subject tests. In that sense, our approach is bottom-up; we have arrived at a subject definition on the basis of the subject tests, a definition which can then be applied independently of the individual tests." (Barðdal & Eyþórssson 2018: 263-264)

[4]The only separate treatment of Danish known to me is a brief article by Hrafnbjargarson (2003), using the criteria of Sigurðsson (1989).

[5]The genitive is only used in possessive constructions and is therefore not part of this paradigm.

Table 1: Pronominal case in 14th century western Middle Danish

	1P.SG	2P.SG	3P.SG		1P.PL	2P.PL	3P.PL
NOM.	*jæk/jak* 'I'	*thu* 'thou'	*han* 'he'	*hun* 'she'	*vi* 'we'	*i* 'you'	*the* 'they'
OBL.	*mik* 'me'	*thik* 'thee'	*hanum* 'him'	*hænne* 'her'	*os* 'us'	*ither* 'you'	*thæm* 'them'

as that of the modern language. The 3p.sg/pl forms are attested in the Jutish Law (of 1241, oldest manuscript from 1284), and this has led to the traditional assumption that Middle Western Danish[6] had already introduced roughly the modern pronominal case system (e.g. Karker 1991: 129, Karker 1993: 198). As we shall see, however, when properly analysed at the level of content, the Western Middle Danish two-case pronominal system turns out to be typologically different from the modern system. Some generative grammarians (Sigurðsson 2006; 2012b,a; Parrott 2012) use the term 'case impoverished' for such modern Germanic languages that have reduced their case inventory to pronouns and there to a minimum of two cases, and insofar as they speak of case as an expression system, this term might apply to Middle Danish as well. However, what matters is not quantity, but the quality of the content organised in such minimal case paradigms. I will claim that a content analysis of the Middle Danish case paradigm will show that it is clearly typologically different from the modern Danish case paradigm, and secondly, that this analysis demands a thorough analysis of the way Middle Danish case paradigms are integrated in more complex paradigms interlocking morphology and constructional alternations.

To conduct this analysis, we must take the semiotic function and content of even a reduced case system seriously. We cannot simply assume that case has no meaning potential and relegate it to a status as part of the expression system, or, in the generative terminology, to phonological form.[7] Nor can we assume that its content is simply the positions defined by an abstract, a priori given syntactic configuration. One part of the exercise will consist in determining the content system of the Middle Danish case paradigm, and contrary to most other present-day approaches, I will not accept any a priori distinction between syntactic and

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[6]The written tradition of Middle Danish falls in two main dialects, Western Middle Danish in Jutland and the central islands and the more archaic Eastern Middle Danish (Scanian) in the provinces east of the Sound, in present-day Sweden.

[7]Not all generative grammarians buy the reduction of morphology to PF, of course, among them especially Kiparsky (1997), but also Sigurðsson (2006; 2012b,a) realises this is a weak point.

lexical case. Given convincing arguments, the discussion is open to the possible conclusion that even a reduced system like the one under scrutiny can manifest a semantic role system, and just that. This is the topic to be investigated in Section 2.

1.2 The word order systems. Why include them?

The word order systems of late Middle Danish and Modern Danish will be investigated and compared, too, as a way to determine whether the oblique A1s share properties with nominative subjects. The model to be used is the so-called *sentence frame model*, a descriptive model with Scandinavian and German roots (Diderichsen 1946, Faarlund 1989; 1990; Faarlund et al. 1997; Heltoft 1992). This positional model does not intertwine syntactic hierarchy and linearity. It presupposes a nonlinear dependency model for syntax but consists of concatenated positions in itself. Some are characteristic or even definitorial (Melčuk 2014) of their syntactic category, others are open positions for a set of syntactic categories. Such open positions can express a separate content system independently of the categories that may fill them. One relevant example for the present agenda is illocutionary force, or better: *illocutionary frame*, the speech act potential coded in word order; another example is background - focus structure.

In Modern Danish, subjects – in the nominative form, if possible – are confined to a limited number of positions, namely two: the open initial position, the so-called fundamental field of Danish topological tradition (the P1 of Simon C. Dik, see Dik 1997: 408-416), and the third position immediately after the V2 position.

(3) a. **Han.**(1pos.) beundrer.(2pos.) (3pos.empty) hende.(post-subject-pos.)
he.NOM   admires   ∅   her.OBL
'He admires her'

b. Hende.(1pos.) beundrer.(2pos.) **han.**(3pos.)
her.OBL   admires   he.NOM
'Her he admires'

c. (1pos.empty) Beundrer.(2pos.) **han.**(3pos.) hende?.(post-subject-pos.)
∅   admires   he.NOM   her.OBL
'Does he admire her?'

The Modern Danish system is clearly an XVSO-system, and in traditional terms, the contrast (3)-(3b) vs. (3c) codes declarative function vs. interrogative function. The basic structure of the paradigm can be laid out in terms from

Peircean semiotics, namely symbolic and indexical meaning. The main expression contrast is between a filled-in position 1 (see (3)-(3b)) and its zero opponent (3c). The symbolic contrast is between constative (pos. 1 filled-in) and interrogative meaning (pos.1 zero), and there is an indexical function to notice as well, namely the 2. position filled by the finite verb.

So in Table 2, position 1 is the locus of the contrast zero vs. X, position 2 the indexical identification of this locus. Position 1 holds the symbolic, illocutionary frame contrast of the paradigm and is thus the locus of the frame of the paradigm; position 2 indicates the locus for this frame and defines the domain of the paradigm.[8]

Table 2: The indexical function of position 2 in Modern Danish word order

1.pos.	2.pos.	3.pos.
X	⇐	V
Zero	⇐	V
hende	⇐	beundrer han
Zero	⇐	beundrer han hende?

Notice that the subject's unique position is position 3, and that this position must be filled in to form the yes-no question (3c). And since the subject in active clauses can in the modern language readily be identified with the argument 1 (A1), the case system and the positional system are clearly related.

There is every reason to ask whether the medieval language had a characteristic, let alone definitorial subject position in the way the modern language has it, that is, whether position plays a role for the identification of subjects and objects, and furthermore, of the arguments A1 and A2. Thus, after an analysis of the role of case in the inactive construction, I will suggest in section 4 an analysis of the word order paradigm for late Middle Danish.

2 The inactive construction in late Middle Danish

The inactive construction of late Middle Danish falls in a number of subtypes, of which I shall deal with three. It is a continuation of a common Norse (and

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[8](For the terminology of this paragraph, see Nørgård-Sørensen et al. (2011); Heltoft & Nørgård-Sørensen (2015); Heltoft (2019).

Germanic, further back Indo-European) set of constructions that deviate in important ways from transitive constructions. Late Middle Danish differs from Icelandic as well, but a detailed comparison is not available, so I will restrict myself to dealing with one basic difference, see Section 2.6.

The constructional set comprises 1) verbs that are inherently semantically inactive, that is: their stems will construe with an oblique A1; 2) verbs with transitive stems, needing an inflectional modification, namely the middle voice form, to form an inactive construction, 3) verbs with neutral stems, construing either with a nominative A1 or an oblique A1, that is, verbs with semantically different case constructional potential, but no morphological change of the stem to mark this difference, and 4) a type with no obvious difference between active voice and middle voice. The subtypes have been selected from a list of lemmas (Bom 1954) for the Old Danish Dictionary (not yet completed), and from a next to complete collection of quotations (card copies in electronic form, GldO).

Two basic issues: 1) The inactive system's interplay with the voice system must be clarified. Some stems allow the inactive construction with the middle voice only, see Section 2.2; others allow it with the active voice, see Section 2.3; again, some apparent mergers of voice allow inactive construction both with the active and the middle voice, but at least in some cases, this distinction expresses a semantic contrast between two subtypes of inactive constructions. 2) Like many other older Indo-European languages, Old Scandinavian, including Old and Middle Danish, allows zero arguments, meaning that DPs at all levels can be let out, or better, replaced by zero. This leads to at methodological problem how to determine whether an argument is a valence-governed actant of a verb stem that has been optionally replaced by zero, or whether it could instead be considered a free syntagmatic extension of the semantic nucleus of the clause (cf. Nielsen & Heltoft 2020), see Section 2.2, Section 2.4-Section 2.5 for details.

2.1 Verbs that are inherently semantically inactive

The verbs belonging to this subcategory take an argument 1 (A1) denoting an animate referent that is causally affected, be it by bodily demands, by mental or social impression or by incidents of fate. I call this semantic role *Inactive*, and constructions comprising it *inactive constructions*.

Some are one-place verbs, excluding the possibility of an argument 2 (A2), for instance: *hungre* 'starve', *thyrste* 'thirst', *værke* 'feel pain' (see (4); *lithe* 'do, fare'; *fare ille/væl* 'have a misfortune/have good fortune'.

(4) then timæ mek   hungrudæ tha gauæ i   megh at ædæ
     thæn time mik   hungrethe tha gave i   mik at æte
     the time me.OBL starved   then gave 2P.PL me   to eat
     'When I was hungry, then you gave me something to eat'(Luc 69v 8-10)

(5) Dønær munnæn   af   thi, at [maghen]   ær saar,   Tha mat
     døner munen   af   thi at maghen   ær sar,   tha mat
     'stinks the_mouth from this that the_stomach has a_wound, then can
     thu mærkæ   athættæ: hanum thyrstær, oc   thæn næthræ læbæ
     thu mærke   a_thætte: hanum thyrster, ok   thæn næthre læpe
     you pay_attention to_this: he.OBL thirsts, and the   lower   lip
     thyrckæs
     thyrkes
     dries_out
     'If the mouth stinks from a wound in the stomach, then you can pay atten-
     tion to this (symptom): He is thirsty, and his lower lip is drying out'(AM
     187, 30, 2-4)

(6) muæ i   vidhæ, ath jegh ær karsk, ock megh lidher   vell
     mughe i   vite   at   æk ær karsk ok   mik   lith-er   væl
     may   2P.PL know that I   am sound and me.OBL do-PRS.SG well
     'I can let you know that I am sound and I am doing well' (Miss II 389,
     Roskilde app. 1510?)

(7) een stundh for   hannum vell ath
     en stund for   hanum væl at
     an hour   fare.PRT.ACT he.OBL well along
     'At one time he (a rich king) fared well (i.e. he succeeded)' (RD II, 249, 3957-
     58)

Two-place: *æve* (forms with breaking: *jave*, *jæve*) 'doubt, be in doubt'; *tvivle*[9] 'doubt', *skilje* 'disagree'. The A2 of these three verbs must have predicational value, either through clausal form as in (8) or through a predicational noun (8b).

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[9]*Tvivle* is a 15th century Low German replacement loan for *æve*. Sources show both inactive and transitive construction and thus, the continuous productivity of the inactive pattern. A handful of later manuscripts have *tvivle* for *æve* in example (7); of these, 4 retain an inactive construction, 3 are transitives, according to the edition's critical apparatus.

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(8) a. iafuær   them   um   oc   skil   them   um
       jav-er   thæm   um   ok   skil   thæm   um
       doubt-PRS.ACT they.OBL about and disagree.PRS.3SG they.OBL about
       hwat hældær hun ær mæth ællær ey
       hvat   hælder   hun ær mæth æller æj
       what either   she   is   with   or   not
       'If they (appointed good women) doubt and disagree whether she is
       with (a child) or not' (DgL V. 5,3)

    b. hwaræ sum mæn   æuær   um   sannænd. thær skal   logh lethæ
       hvare   sum mæn   æv-er   um   sannende thær skal   logh lethe
       where   REL   man.PL doubt-SG about truth   there must law   guide
       hwilt   ræt   ær
       hwilt   ræt   ær
       which right is
       'Where people are in doubt about truth, there the law must guide
       which is right' (CCD X, 3v)

Example (8b) is included because it shows a secondary morphological effect of the construction's semantics. There are hosts of medieval manuscripts of this text, the prologue of the Jutish Law, but not a single variant of this reading showing a plural form *æv-e* to agree with *mæn* 'men'. The inactive construction does not allow concord between A1 and verbal number, only transitive constructions with a nominative A1 allow this, and even though nouns no longer inflect for the nominative vs. oblique distinction, the concord rules are still maintained[10], banning concord with inactive constructions.

2.2 Middle voice inactive verbs

Some verbs need a middle voice form in order to construe inactively. The verb *te* is from te-a, Icelandic *tjá*, and its active voice forms are transitive only (9), the *s*-form has a clearly passive variant (10).

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[10]Bjerrum (1949: 166) writes: In "impersonal constructions" into which it is impossible to interpolate any subject (...) the verb is invariably in the singular, e.g. *skil børn with mothær* (51[5]) si mater et pueri discordant ... ", that is: 'if the children disagree with their mother'

(9) Ok ther   thu   hanum thitt   wredhe anledhe, Tha ær
    ok te-r   thu   hanum thit   vrethe andlete tha ær
    and show-PRS.ACT.SG 2P.SG he.OBL POSS.2P.SG angry face   then is
    thet ey taknemælight, hwat got   thu gør hanum
    thæt æj taknemlikt   hvat got   thu gør hanum
    it   not evident   what good you do he.OBL
    'And if you show him your angry face, then it is not evident what good
    you are doing to him' (Sydr 161, 18-19)

(10) oc   ænglæ føræ foræ   hanum korss   tegn,   ath thet skal
     ok   engle føre fore   hanum kors   tekn,   at thæt skal
     and angles carry in_front of_him the_sign_of the_cross, that it   will
     theræ thees   foræ al mankøn.
     thære te-s   fore al mankyn
     there show-PASS for all mankind
     'And angels will carry the sign of the cross in front of him, so that it be
     there shown to all mankind' (Luc 69r 7-10)

The middle form in East Norse -s (West Norse -sk/-st) has four semantic vari-
ants (Dyvik 1980; Heltoft 2006), of which the passive is but one. The middle voice
functional varieties are the reflexive function, the reciprocal function, and the
detransitive function. The reflexive and the reciprocal functions are transitive
variants, so the relevant function for the discussion of the inactive construction
is the latter, detransitive one[11]. Examples are (11)-(13):

(11) Tees   thic   thet,   thic   wel liger,   tha ladh
     te$_a$-s   thik$_{A1a}$ [thæt,   [thik$_{A1b}$ væl liker$_{b\_\_A2b}$]$_{A2a}$, tha lat
     show-MIDDLE 2SG.OBL that.NOM 2SG.OBL well likes,   then let
     sighe messe   de trinitate (...)
     sighje misse   de trinitate
     say   the_masses of Trinity
     'If you behold that which pleases you, then let say the masses of Trinity'
     (Bønneb III, 122, 17)

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[11]The reflexive function is demonstrated in (i) *Gudh alsommæctigste teedes henne* 'the almighty
God showed himself for her' (Bønneb II, 133, 15); the reciprocal function in (ii) *the tordæ æy
tees førræ æn the brudæ kostæ oc skyuldæ tøm met* (Luc 76v 7-10) 'they (Adam and Eve) dared
not show themselves to each other until they had broken off twigs to hide themselves with'.

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In (11), both verbs are inactive. The verb form *tes* governs the arguments sub-scribed with an *a*, the verb *liker* those with a subscribed *b*. In both cases, the A2 is an embedded clause. In (12) and (13), the A2's cannot be read as agents and hence they are not transitive, but inactive.

(12) Meg   thee-s   twæne honde   folck
      Mik ₐ₁ te-s   [tvænne hande   folk] ₐ₂
      1P.SG.OBL appear-PRS.MIDDLE two   kinds_of people
      'I see two kinds of people before me' (JBB kap.7, b5v)

(13) ogh ther thedhes   them   stiærnen   i_geen, efter ad hun
      ok thær te-th-es   thæm ₐ₁ stiarne-n ₐ₂ i_gen, æfter at hun
      and there appear-PRT-MIDDLE 3PL.OBL star-DEF   again, after that she
      borthe war
      borte var
      gone   was
      'And there the star appeared to them again, after it had been gone' (Ve-jlPilgr 220, 12)

In (14) and (15), I address the problem of zero arguments. In Old and Middle Scandinavian, DPs at all levels can be replaced by zero , and as premises for assuming a zero, I posit either conceptual necessity or linguistically well-defined ellipsis, and (14) will show conceptual necessity. In (14), the A1 is represented by zero, since it is referentially unspecified. The A2 is specified: 'then some sign (A2) would appear (to whoever might be the perceiver, A1)', a conceptually necessary A1 referent, in the present case generic and therefore also textually omissible.

(14) vare   han saan at saken, tha tedess   e   noget
      var-e   han san   at saken, tha te-th-es   e
      be-SUBJ he guilty as charged then appear-PRT-MIDDLE always
      teken i hans andlade, ther man mattæ kenne thet, æn vare han vsan,

      tha tediss icke. [noket tekn] ₐ₂ i hans andlete æn vare han usan, tha

      some sign in his face but be-SUBJ he not guilty then
      te-th-es ække ₐ₂
      show/appear-PRT.MIDDLE nothing

'If he should be guilty as charged, then some sign would appear in his face (...) but should he be not guilty, then nothing would show' (HellKv 8, 1)

Apart from the omissibility of A1 (a zero argument, again of the verb *tethes*), example (15) is included to document the existence of actantless predicates (here: *ræghne* 'rain') in Middle Danish, in the sense that they have *zero valence*, that is: no actant at all. This proves that Middle Danish, like so many other old Indo-European languages, does not have categorical NP-VP structure as a necessary structural principle. The context is: ...*that from Adam's time and until the day of Noah* ...

(15)   Tha regnedhe   aldrigh, Ok teddes   ekke regn
      Tha ræghnethe aldrigh, ok   te-th-es   ække ræghnbughe $_{A2}$
      then rained   never,   and appear-PRT-MIDDLE not   rainbow
      bwæ pa hemmelen pa hemelen

      in the sky

      'then it never rained, and no rainbow appeared in the sky' (Sydr 51, 11-12)

I have interpreted (14) and (15) according to the classical rules of zero arguments in Old Scandinavian, see Heltoft (2012); Faarlund (2004). Theoretically, they could be seen as bridging examples allowing also the modern intransitive reading with a subject A1. In both cases, they would show subjects in a position later than the third structural position, cf. Section 4.2.

2.3 Neutral stems

Some stems are neutral with respect to the transitive-inactive contrast, examples being: *thrængje* 'put a strain on, bother'• 'need, be in jeopardy'; *varthe* 'be responsible for, guard'• 'concern, be somebody's task or obligation'. Such verbs allow inactive construction with the active voice, and the opposition between transitive and inactive is manifested by the syntagmatic argument hierarchy only. Notice that (16)-(16b) are transitive constructions, so the A1s are subjects, the oblique case arguments are A2s and direct objects.

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(16)   a. Mæn vndher haffde swa trængth   hannum, at han wisthe
           Men under $_{A1}$ havthe sva thrængth   hanum $_{A2}$ at han
           but miracle had   such overwhelmed he.OBL   that he knew
           ey, hwat han skulle sighæ.
           viste æj hvat han   skulle sighje
           not what he   should say
           'But the miracle had overwhelmed him so that he knew not what to
           say' (ML 152, 19 - 153, 2)

       b. Nar ikten trængher tegh   tha   strygh tegh wel   om
           nar ikten $_{A1}$ trængher thik $_{A2}$ tha   strygh thik   væl
           when the   gout   bothers 2SG.OBL then   smear yourself well
           medh salffuen
           om   mæth salven
           with the   balm
           'When the gout bothers you, then smear yourself well with the balm'
           (Lægeb Thott 47, 30)

       c. oc skal han bevi[se] them ydermer vinskap om   them
           ok skal han bevise   thæm ythermer vinskap um   thæm
           and must he   show   more friendship to   them, if
           threnger eller   vetherthorvæ
           $_{A1}$ thrænger æller   vitherthurv-e
           3PL.OBL are   in   distress
           'And he must show more friendship to them, if they are in distress or
           they need this' (3/8 1442 Varberg)

In (16c), however, the oblique case argument *thæm* is the A1 (the A2 is probably
zero = *ythermer vinskap* 'more friendship) [12] .

The verb *varthe* is transitive in (17). It has number agreement between the
nominative subject and the finite verb, and the A2 in in the accusative, as in un-
marked transitive patterns. Example (17c), however, is an inactive construction
on the basis of the same verb stem in the active voice[13]. The use of the cataphoric

___

[12]The verb *vitherthurve* 'be in need of something' and its simplex *thurve* 'need' are not inactive
verbs, and the GldO has no examples. The conjunction between *thrænger* and *vitherthurve*
does not prove anything about subject status for the A1, since oblique A1s cannot agree with
verbal number. *Vitherthurve* can easily be read as a zero-argument transitive: (they) are in need
(of this) (i.e. friendship). There is nothing in Old Scandinavian like Modern English or Modern
Danish gapping rules.

[13]Similarly in Old Icelandic, with an accusative A1: (*at segja þér þat*) *er þik* (acc) *varðar* 'to tell
you what concerns you'.

nominative pronoun *thæt* is not obligatory, it is not a formal subject marker, and this construction therefore consists of an A1 in the oblique case, and a predicational A2 (*at the havaæj vin*). The A1 has inactive semantic role meaning (in this case as the Obliged in a relation of duty or relevance coming from the outside).

(17) a. <the owner of   a   pond may bar his   fellow-villagers'
           utæn the   warthæ han   æm   wæl sum han.
           uten the $_{A1}$ varth-e han $_{A2}$ æm   væl sum han
           access to the pond> unless they.NOM.PL guard-PL it.ACC[14] just as well

           as he.
           'Unless they guard it just as well as he' (DgL V 192, 3)

     b. Hwat waardher thet   miik eller   tik,   at   the hawa ey
         hvat varthar   thæt $_{A2}$ [mik æller   thik] $_{A1}$
               what   concerns it.NOM me.OBL or   2P.SG.OBL
         wiin, (...) [at the hav-a æj vin] $_{A2}$

          that they.NOM.PL have-PL not wine
         'How does it concern me or you that they have no wine'

     c. Thet   wordhar them   som os   hawa budhit, oc ey os,
         thæt $_{A2}$ varthar thæm $_{A1}$ sum os   hava buthit ok æj os $_{A1}$
         it.NOM   concerns 3PL.OBL REL us.ACC have asked   and not us.OBL
         thet at the hawa ey wiin. [thæt at the hava æj vin.] $_{A2}$

         this that they have not wine
         'It concerns those who have invited us, and not us, that they have no
         wine' (Post 46, 9-13)

---

[14]In the Scanian Law, the transitive interpretation of the verb *vartha* governs a dative object: *Eld-e* (D) *sin-um* (D) *scal man vartha* (CCD III 93r) 'a man must safeguard (or 'be responsible for') his fire'. The West Danish example could either match the Old Icelandic situation where *varða* in the sense of 'guard, watch' governs the accusative, or it could be an instance of the general loss of verbal government of the dative case. I retain ACC here, since the form indicates that this source preserves the accusative (*han*) vs. dative (*hanum*). There are no examples known to me of inactive constructions in Western Middle Danish that preserve a distinction between the accusative and the dative.

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A fourth example of a neutral stem would be the verb *skilje*, meaning (transitive) 'divide', (reflexive) 'part, divorce' and (inactive) 'disagree'. The inactive function is exemplified in (8).

2.4 An apparent voice merger

Some inactive verbs construe inactively as such irrespective of voice, that is, both the active voice and the middle voice can be used. I will discuss the verb *thækje* 'learn, find reasonable'• 'like, please', which allows an A2 of either type: non-predicational or predicational. In the active voice, the inactive construction of *thækje* means that 'somebody knows or learns something', or that 'somebody finds something reasonable', as in (18)-(19).

(18) vthæn   standæ   moth   høymot   oc bældæ   met   mywgdom,
hanum_{A1} thækk-er thæt _{A2} [at   han varther   forsmath thær
but   stand   against haughtiness and arrogance with   meekness
tho uær men   hanum   tekker thet at han   vorthær forsmoth
af   fore værden.] _{A2}
even if he.OBL learn-3PRS.SG that   that he becomes despised for
ther aff   fore værdæn.

this reason for   the
'But he must resist haughtiness and arrogance with meekness, even if he learns he is despised for this by the world' (Luc 65r 14-17)

(19) æn   ther forudhen   ma man delæ   hannom fore hærwirke sagh,
æn   thær foruthen   ma man dele   hanum fore hærwirke sak
even there in_addition may one charge him   for   armed   robbery
oc   æn   ydermere vm hannom thecker
ok   æn   ythermere um hanum_{A1} thækker
and even more   if he.OBL seems_reasonable
'And in addition to this, one may charge him with armed robbery, and even more if he finds this reasonable' (Thord Degn text 2, 122, 20)

The middle form of this verb is *thækkjes* 'to please, to satisfy', in religious texts a most frequently discussed relation to God and Jesus, and therefore one of the best documentations of the distribution of case forms, including word order.

(20) Oc æy   thes mynne gøre   the ther æffter   alt
     ok æj   thæs minne gøre   the thær æfter   alt
     and nevertheless do   they   thereafter all that they.OBL please-MIDDLE
     thet them thækkes
     thæt thæm $_{A1}$ thækk-es ___ $_{A2}$

     'And nevertheless they do thereafter [after the Holy Communion] anything
     they please.' (Fragm 107, 15-16)

Examples (21)-(22) have 2sg nominative A2s.

(21) i   gardagh   thæckthes thu   mik   mæsth
     i   gardagh   thæk-t-es thu $_{A2}$ mik $_{A1}$ mæst
     yesterday please-PRT-MIDDLE.3SG 2SG.NOM 1SG.OBL (the) most
     'Yesterday I loved you the most.' (ML 424, 21)

(22) hwn   leffdhæ fulkommelighæ i ræthfærdughet, oc ther   fore
     hun   livde   fulkommelike i rætfærthughhet ok thær   fore
     she.NOM lived   completely   in righteousness and therefore please-PRT-MIDDLE.3SG
     thæktes   hwn   gudh
     thæk-t-es hun $_{A2}$ guth $_{A1}$
     she.NOM   God
     'She (Anna) lived completely in righteousness, and therefore she pleased
     God.' (Bønneb III, 61, 8-10)

Notice that (22)-(23) cannot have the transitive reading 'do something to please'.
They mean 'A1 finds pleasure in A2'.

In the case of *thækkje* there was a clear semantic difference between the lexical
meanings realised, in the active and the middle voices, respectively. In all proba-
bility, some instances of genuine mergers are also found. In addition to example
(6), there is also the following version of a poetic formula:

(23) jen stwndh fors hanum   fwld wæl adh
     en stund for-s hanum   ful   væl at
     at a   time fare.PRT-MIDDLE3SG he.OBL full well along
     'For some time, he (a rich king) fared very well (i.e. he had great luck).' (RD
     I, 147, 4620 – 4621)

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Other candidates would be *thykje(s)* 'think, seem' and *hope(s)* 'hope, wish'. However, space will forbid a more thorough investigation, and the full overview is – as I see it – no precondition for the present line of thought: to lay out the paradigmatic organisation of case and constructions in Middle Western Danish, in order to relate this to some basic differences between the paradigmatic organisation of word order in Middle and Modern Danish.

2.5 The loss of the accusative-dative distinction

Even a brief comparison of Middle Danish with Old Icelandic will show a major difference, namely the loss of a clear accusative vs. dative distinction in Danish. The archaic Scanian dialect preserves clear datives in cases like (24) and (25).

(24)   æn brista   brythianum   the   logh
       æn brist-a   brytia-num   the   logh
       but fail-PRS.PL tenant-*-DEF.DAT.SG [DEM.NOM.PL proof-through-oath.NOM.PL]
       'But should the tenant fail in performing his proofs.' (CCD III, B74 95v)

Notice the number concord in (24) between the subject *the logh* and the finite verb *brista*. Whether this construction belongs to the inactives, will be discussed below.[15]

(25)   <Sama nattena   tha   hon   var   dødh
       tha   tedhis   abodanum   en   andelik   syn.
       tha   te-th-is   abod-a-num   A1   en   andelik
       then   show-PRT-MIDDLE abbot-*-DEF.DAT.SG [a-NOM spiritual.NOM vision]
       'same night when she was dead'>

       syn
       A2
       'On the same night when she had died, then the abbot had a spiritual vision.' (SjT 34, 5–7)

Clearly, (25) documents the distribution of case with this type of inactives in the archaic Scanian dialect, but what is hard to document in Danish is not the use of explicit datives for the A1 of inactive constructions, it is the accusative. The earlier, presumably Common Norse system was preserved in Old Icelandic (and to a large extent even in Modern Icelandic), and here the A1s can appear

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[15]In (24)-(25), * = a syncretism of ACC/DAT/GEN, characteristic of the an-stems and ōn-stems

in the accusative. I shall compare the situation with two verbs, in Section 2.5.1. the verb OIcel. *reka*, Middle Danish *vreke*, *vrake*; in Section 2.5.2. the verb OIcel. *bresta*, Middle Danish *briste*.

2.5.1 A difference from Old Icelandic

Old Icelandic has the inactive construction type (26) (cf. Sigurðsson 1989; 2006):

(26) bát-a-na   rak   til   lands
      boat-ACC.PL-ACC.PL.M drift.PRT.SG ashore
      'The boats drifted ashore.'

The archive of the Dictionary of Old Danish lists as comparable verb forms transitive *vreke* 'drive out, expel' • 'open a lawsuit', from *wrekan (Ablaut type 5), and a parallel (mainly East Danish) form *vrake*, corresponding to Germanic *wrakan, but possibly a relatively recent remodeling to Ablaut type 6.[16] The intransitive meaning 'drift' and the inactive construction is not found in the data in the active voice but has apparently been replaced by a mediopassive intransitive. Such intransitives as (27a)-(27b) can have nominative subjects.

(27) a. oc han scal castæ af sit timbær (…) oc   thet
          ok han skal kaste af sit timber (…) ok   thæt
          and he   must throw off his timber (…) and this.NOM/OBL
          wrax   in   til lands
          vrak-s   in   til lands
          drift-PRS.MIDDLE ashore
          'And he must throw overboard his timber or other valuables, and this
          drifts ashore.' (DgL V 352, 4)
      b. um   wrac   af   haf wræcs   in   til landz
          um   vrak   af   hav vræk-s   in   til lands
          about wreckage from sea drift-PRS.MIDDLE ashore
          'About wreckage that drifts ashore from the sea.' (DgL V 349, 8)

True, the pronominal form *thæt* does not distinguish the nominative from the accusative but judging from Old Icelandic this distinction is clear-cut. Example (28a) is the inactive construction, while (28b) is a reflexive construction with a nominative subject.

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[16]East Norse preserves Germanic *w- in front of r-, compare Old Danish *vrēth* 'angry' to Old Icelandic *reiðr* 'angry'. There is even a -jan-formation *vrekje* 'expel', from *wrak-jan, to be disregarded here.

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(28) a. <hann> skilr   svá við   hana   at hana   rek-r
          (he)   departs in such_a_way from_her that she.ACC drift-PRS.ACT
          dauð-a   eptir ánni
          dead-ACC.F along the_river
          'He gets rid of her in such a way that she drifts dead down along the
          river.' (*HeiðrR* 53[15], Normalised by author)

      b. segir   þat osynniu ath hon   rekiz   j
          segir   þat ósynju at   hon   rek-i-z   í
          (he)_calls it   unwise that she.NOM go_around-PRS.SUBJ-MIDDLE in
          suo   dyrum klædum
          svá   dýrum klæðum
          such costly garments
          'He says it is unwise for her to walk around in such costly garments.'
          (ClarB 19[30])

The correct strategy here is to postulate only inactive constructions where
inevitable. The data are scarce, but it seems likely that this type of inactive con-
struction has been replaced in Danish, in this case by an intransitive middle form.

2.5.2 The verb *briste/bresta*

The polysemous verb *briste* 'burst, split' • 'fail' • 'miss, lack, be short of' (Old
Icelandic *bresta*) is yet another illustration of the way the Danish construction
has been reshaped. In the sense of 'lack, miss', *bresta* is documented with an
accusative A1 *mik* (the dative is *mér*):

(29) eigi brest-r   mik   áræði
      not lack-PRS.3SG 1P.SG.ACC courage
      'I do not lack fighting spirit.' (ONP 750 Vatnsdæla saga)

Even in the most archaic Danish data, I have found nothing similar with any
type of DP, so the accusative type has been merged with the dative type, as typical
of almost all other occurrences, as in (30):

(30) førstæ them   brøster   wobn i strid   tha holdæ the   met
      fyrste þæm   brist-er   vapn i strith   tha halde the   mæth
      first they.OBL lack-PRS.SG weapon in combat then hold   them with
      æn hand oc slaa   met   then annen
      en hand ok sla   mæth þæn anne
      one hand and punch with the   other
      'As soon as they lack a weapon in combat, they grip (the enemy) with one

hand and punch with the other one.' (Luc 60r 21-23)

This means we can ask whether constructions with the other senses of *briste* should also be analysed as inactive constructions. Consider (31) (sense 'burst') and (32) (sense 'fail'):

(31) Æn cumær thet swa at hin ær akær at hanum bristær tømæ. ællær
    en kumer thæt sva at hin ær aker at hanum brister tøme æller
    but comes it so that he who drives that he.OBL bursts rein or
    hin er rithær at hanum bristær tyghlæthær. oc wagn løpær
    hin ær rither at hanum brister tyghlæther. ok vagn løper
    he who rides that he.OBL burst-PRS.SG bridle and cart runs
    ællær hæst rænnær mæth hanum. oc man fár thæræ døth af.
    æller hæst rænner mæth hanum ok man far thære døth af.
    or horse runs with him and man becomes there death from,
    tha …
    tha …
    then …
    'But if it happens that he who drives that the rein bursts for him, or he who rides that the bridle should split for him, and the cart or horse run with him and (this) man meets his death from this, then ...' (DgL V 202, 9)

Where the sense of 'burst, split' is concerned, there is no conceptual necessity that an oblique actant should be part of the valence schema. We can have *tyghlæther brister* 'the bridle splits' and *bughe brast* 'the bow burst', Old Norwegian *Jorðin oll brestr oc rifnar* (ONP 2: 750) 'the whole earth is bursting and quaking', without implying an extra Afficiary[17] actant. The Norwegian example has a nominative subject and documents that the verb is intransitive in this sense. An Afficiary actant may of course be added, but then freely, as a free oblique argument with the Afficiary Role as the A2, in the present case the Maleficiary variant. In (32), the meaning of *briste* is 'fail, not succeed', clearly implying an argument ascribing the notion of a Maleficiary to its referent.

(32) en brister hannum takk. eth skotæ. tha gøme bondæ sialf
    æn brist-er hanum tak æth skote tha gøme bonde sialf
    but fail-PRS.3SG he.OBL guarantee or proof then guard landowner self

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[17]The terms Afficiary and Maleficiary are from Zúñiga (2011).

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> sin thiuf
> sin thjuv
> REFL thief
> 'But if guarantee or proof fail him (a suspected thief), then the landowner may himself alone take his thief into custody.' (JL CCD X, C 37, 45r)

On the basis of this line of argument, I group the types (24) and (30) together with (32) as synchronically belonging to the inactive constructions. The A1 is in the oblique case, and neither subordinate sense is compatible with any notion of agenthood where the semantic roles are concerned. What we obtain, is a new variant of the A1 Inactive role, namely the Afficiary role, in addition to the Experient role. Notice that in transitive constructions, Afficiary meaning can only be ascribed to A3s, since the dative with verbs like *thakke* 'thank', *skathe* 'do harm to', *møte* 'meet', *varthe* 'be responsible for' has been lost in Middle Western Danish.

2.6 Case roles of the inactive constructional system

In this survey of inactive Middle Danish predicates, the categorisation below seems to cover most of the occurrences. No Agentive meanings are coded, and the Inactive semantic roles apply to animate referents that could in a different constructional context very well carry Agentive meaning. The inactive role differs from the patient role in that the latter applies freely to animate referents and inanimate referents alike, the former only to potential agents.

1. Unspecified inactive one-place verbs, for instance: *hungre* 'starve', *lithe* 'go, pass' (of time and fate), *thyrste* 'thirst, be thirsty', *værkje* 'feel pain, be in agony'.

2. Three subtypes of two-place verbs, each displaying a bound variant (a variety) of the Inactive role, depending on the type of relation denoted.

   a) A1 (Experient), A2 (External factor), such as: *angre* 'repent', *drøme* 'dream', *hope(s)* 'hope', *minnes* 'remember', *sjunes* 'seem', *tes* 'appear', *thryte* 'regret', *thækkje(s)* 'know, learn'; 'please'.

   b) A1 (Afficiary), A2 (External factor), such as: *briste* 'fail', *rækkje* 'be enough, suffice', *vanskes* 'lack', *vante* 'lack'.

   c) A1 (Obliged), A2 (External factor), such as: *byrje* 'ought', *høre* 'ought', *sta/stande* 'befit', *varthe* 'be responsible for, have as one's duty'.

3 The paradigmatic organisation of pronomial case in Western Middle Danish

So far the analysis has shown that we cannot know the actual content of the case forms without checking their valence bearer, i.e. the verb stem governing them. Actants in the oblique case are polysemous as far as the content of the case form is concerned. Case forms with one-place verbs are simple, since a nominative actant will be checked against an intransitive verb and the abstract, open semantic role (the classical, general function of the nominative) will be selected, for instance, *the gape* 'they gape, open their mouths wide' has the nominative *the*, and since both agentive and non-agentive readings are possible, the stem *gap-* confirms that this nominative must be read in the open, unmarked sense. In *mik thyrster* 'I am thirsty' the oblique form *mik* will point to the stem *thyrst-* to acquire the inactive role reading, excluding the patient reading. In the case of two-place stems, let alone the polysemous ones like *thrængje, varthe* and *skilje*, the argument hierarchy helps to determine which variety (bound variant) of the case meaning is the relevant one, and it is therefore part of the paradigmatic organisation. Case meaning and constructional meaning must both be included in the paradigmatic analysis. Say that the semantic roles relevant for transitive constructions are Unmarked role (very often Agent), calling for the nominative case, and Patient, calling for the oblique case. This pair of roles will not apply as case meanings for the arguments of the inactive constructions such as *hanum thækker thæt* 'he learns this', cf. (18). The oblique form *hanum* must manifest an A1 and hence this case form must denote the inactive role, an animate referent, with two-place predicates, influenced by some external factor, for instance: a phenomenon perceived, a norm to be complied with, or some state-of-affairs related to what is in one's interest or need. Notice again: It is excluded from any meaning of agenthood or intentional action.

The form *thæt* 'that/it' denotes the external factor leading to the state of satisfaction on behalf of A1's referent, that is, it is a nominative A2 with a very specific meaning. Syntagmatic hierarchy and case oppositions go together, and such combinations of morphological contrasts and syntagmatic systems were called connecting paradigms by Nørgård-Sørensen et al. (2011), since they consist of both morphologically determined meaning potential and constructional determination of the choice between options given by the polysemous case system. Thus, the structurally determined meaning of the members of the case paradigm is the result of an intersection between morphology and construction, and case meaning has both a morphological expression system and a syntagmatic, constructional one.

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To see this in uncomplicated practice, take the German dative case form. This will receive different semantic interpretations from different predicates. In (33)-(35), a well-known type of example, case meaning differs along with argument hierarchy.

(33) *Mir*   (dative A1) ist kalt.
      Me.DAT (dative A1) is cold.
      'I am cold'.

(34) Sie hat *mir*   (dative A2) gedankt.
      She has me.DAT (dative A2) thanked.
      'She thanked me'.

(35) Wer hat *mir*   (dative A3) das Hemd schenken wollen?
      Who has me.DAT (dative A3) the shirt   to   gift   want.
      'Who wanted to give me this shirt?'

Schematically, cf. Table 3.[18]

Table 3: Hierarchy of German dative

Hierarchy Case	A1	A2	A3
			Afficiary
Dative Inactive	Patient/Comitative		

The present analysis of Middle Danish can be represented as Table 4.

The status of the nominative A1 as unmarked is of course fully compatible with the expectation that the majority of lexically, not grammatically determined roles will be Agents, but the nominative in transitive constructions does not insist on this.

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[18]It is not important to discuss here whether the dative A2 means Afficiary or Patient, or whether dative verbs like *begegnen, begleiten and folgen* take a Comitative A2.

Table 4: Case paradigm and argument hierarchy in Middle Western Danish

Hierarchy Case	A1	A2
Nominative	Unmarked	External Factor
Oblique	Inactive	Patient

3.1 The indexicality of case

The semiotic function of pointing between signs is well-known from C.S. Peirce's semiotics as a subtype of the indexical function. This notion has been applied especially to morphology by Andersen (1980) and Antilla (1975), with a clear indication that it will apply to syntactic and topological issues as well.

When indexical, case forms point to their governing predicate as the locus where their exact semantic function is determined. The predicate determines the relevant argument status and the relevant variety of semantic role. With the oblique form, the choice is between Inactive and Patient; with the nominative, it is between Unmarked role (very often lexically filled in as Agent) and External factor (Experiencer, Afficiary or Obliged). Thus, the nominative of the two-place inactive construction points to an inactive verb and receives A2 status, with a very specialised semantic role meaning potential.

In conclusion, indexical case means the case form depends for its actualised meaning on its predicate. Importantly, indexical case structure is but one typological organisation of case. To some extent, Old Indo-European languages have symbolic case structure[19] , and as we shall see, Modern Danish has in fact abolished indexical case to replace it by a simple symbolic opposition, see Section 5.

3.2 Subjects and objects

Up to this point, I have by and large avoided the issue of grammatical relations in the sense of subjects and objects. The argument hierarchy is laid out as pro-

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[19]Where symbolic case is concerned, the case form alone bears case meaning. A well-known remnant of simple symbolic case in Latin is found in *cave canem* 'beware of the dog' vs. *cave cani* 'take care of the dog'. The case opposition specifies the meaning potential of the verb stem cave-, in itself neutral to this opposition. Case is normally indexical in Latin. In *signa ... detracta lucis* 'emblems carried out from the groves' (Tacitus Germ. 140, 3), the case ending -is indicates the stem detract- from where the ablative sense of the case ending is determined.

jections of valence structure, and a priori assumptions of a connection between A1 and subject, A2 and direct object has been deliberately shunned.

Melčuk (2014) suggests a set of universal syntactic criteria for (*not* features of) the universality of subjects, applied by me inHeltoft (2021a,b). To the criteria of Keenan (1976), he adds a distinction between definitorial criteria (necessary for a given language) and characterising criteria (frequent, but not necessary). Very briefly, his definitorial criteria are laid out in 1-7. The *subject candidate* (SC) must be checked against the following parameters:

1. Is SC an immediate actant of the Main Verb? (it must be)

2. Is SC omissible or not?

3. Does SC hold a particular linear position?

4. Morphological impact on the main verb (personal-numeral agreement)

5. The main verb's morphological impact on SC (Does the main verb govern SC's case marking?)

6. The main verb's inflection affecting morphological links to the SC (refers to voice, antipassive construction)

7. SC's pronominalisation if this affects morphological links between the MV and SC.

On the basis of Section 2, we can now determine the subject criteria relevant for Middle Danish and compare them to the criteria relevant for Modern Danish.

Criterion 1 applies to all instances of A1 and A2, both in transitive and in inactive constructions[20], and where criterion 2 is concerned, all arguments are omissible. Thus, neither of these parameters are relevant for Middle Danish.

It must be an open empirical question whether the subject candidates hold a particular linear position, and I will deal with this in Section 4. To reveal the conclusion already here, Middle Danish does not have a subject position, whereas the modern language certainly has developed one, cf. Section 1.2. This means that we are referred to morphological criteria, namely to numeral concord and to case rection (government). In transitive constructions, the A1 must be in the nominative case; inactive constructions, by contrast, take the A2 in the nominative. As

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[20]I omit here a discussion about the status of Predicative complements as Main Predicates, see Heltoft 2017, in general Hansen & Heltoft 2011.

a general principle, nominative DPs agree with the finite verb in number,[21] cf. Section 2.1. These criteria point to the nominative DPs as the subjects of Western Middle Danish. Parameter 7 is relevant as far as it determines the application range of nominative government. Voice cannot count as a defining feature, since inactive constructions do not have an active voice vs. passive voice contrast.

3.3 A constructional typology: case, grammatical relations and argument structure

The outcome of the analysis is that the overall distribution of case defines the subject in Middle Danish, whereas the argument status is responsible for the ascription of semantic role variety within the case system. There is no traditional term for a grammatical relation corresponding to the A1 inactive, since the idea of a direct object is intimately connected with the transitive pattern. We can illustrate the two types in Table 5

Table 5: Transitive and inactive constructional typology

(a)

Transitive structure	
A1	**A2**
S (nominative)	—
S (nominative)	**DO (oblique)**

(b)

Inactive structure	
A1	**A2**
inactive (oblique)	—
inactive (oblique)	**S (nominative)**

To add to the relevance of the distinction between arguments and grammatical relations, I include two further possible interaction types between morphology, grammatical relations and argument structure, namely the constructional option found in both English and Modern Mainland Scandinavian, somewhat

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[21]Some details omitted, especially about the singular substituting for the plural, never vice versa.

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confusingly named 'ergative' by Halliday (1968; 1994). Hansen & Heltoft (2011) call this pattern the incausative pattern, and Danish verbs construing in this way are: *brænde* 'burn', *dreje* 'turn', *standse* 'stop', *vælte* 'turn over', *øge* 'increase' etc., the translations immediately offering English parallels.

(36) a. De   brændte
          They.NOM burned
          'They burned.'

      b. Hun   brændte dem
          She.NOM burned   them.OBL
          'She burned them.'

The incausative structure is shown in Table 6. It is a combination of ergative argument structure with transitive grammatical relations and transitive case morphology. The modern case morphology involved is different from that of Middle Danish, see below Section 5.2, in that it no longer marks semantic role. It is an example of ergative argument articulation in combination with what looks like transitive morphology.

Table 6: Incausative-causative structure

A1	A2
S (nominative)	—
DO (oblique)	**S (nominative)**

To make this point stand out, I add classical ergative structure, as represented by Greenlandic in Table 7 , examples (37)-(38).

Table 7: Ergative constructional typology

A1	A2
S (absolutive/nominative)	—
O (absolutive/nominative)	**S (relative)**

Greenlandic has always number and person concord between subject and finite verb, and in transitive clauses even between direct object and finite verb. In transitive clauses, the intransitive concord is maintained and yet another layer of concord is added. In elementary Greenlandic:

(37) a. piniarto-q   piniar-poq
           sealer.ABS-3SG hunt-INDIC [3SG(SUBJ)]
           'The sealer is/was hunting.'

      b. piniartu-t   piniar-put
           sealer.ABS-3PL hunt-INDIC [3PL(SUBJ)]
           'The sealers are/were hunting.'

(38) a. puisi   siku-mi   sinip-poq
           seal.ABS.3SG ice-LOC.SG sleep-INDIC [3SG(SUBJ)]
           'The seal is/was asleep on the ice.'

      b. piniartu-p   puisi   pisar-aa
           sealer-REL.3SG seal.ABS.3SG catch-INDIC [3SG(SUBJ).3SG(OBJ)]
           'The sealer catches/caught the seal.'

      c. piniartu-p   puisi-t   pisar-ai
           sealer-REL.3SG seal.ABS-3PL catch-INDIC [3SG(SUBJ).3PL(OBJ)]
           'The sealer catches/caught the seals.'

      d. piniartu-t   puisi-t   pisar-aat
           sealer.REL-3PL seal.ABS-3PL catch-INDIC [3PL(SUBJ).3PL(OBJ)]
           'The sealers catch/caught the seals.'

3.4 Summary

Summarising Section 3, the main point is that inactive constructions cannot be reduced to transitive constructions, and the semantic role ascription to their A1s cannot be reduced to that of transitive subjects. The polysemy of the members of the case category is resolved by indexical pointing to the predicate as the valence bearer. In Section 5, we shall see that this system was replaced by a symbolic, non-valence governed case system, mirroring at first syntactic relations alone, later also phoric distinctions.

4 Inactive constructions and the topology of Middle Danish

In this section, we return to Melčuk's criterion 3 (Melčuk 2014) and the question whether Middle Danish subjects can be positionally identified. One point here is Melčuk's distinction between definitorial criteria, which are necessary for a

given empirical language, and characterising criteria, for instance prototypically relevant features, and thus also standard identifications of subject positions as the position held in unmarked clauses (the more marked positions then being transformationally derived). What we are asking, then, along with Melčuk, is whether some positional criterion is unique for the Middle Danish subject. For instance, Modern French subject topology is unique, in that this language has a position reserved for subjects, and furthermore, an obligatory one.

I shall add the question whether Middle Danish had a particular linear position for subjects, and next, whether subjects contribute to the content side of the word order paradigm for Middle Danish. We have already seen in Section 1.2 that Modern Danish certainly has a semantically coded subject position.

I have claimed elsewhere (Heltoft 2003; n.d.; Heltoft & Nørgård-Sørensen 2015) that word order can be paradigmatically organised. Just like with morphological paradigms, we must distinguish between the *frame* of word order paradigms: the semantic content zone coded in the paradigm, and the *domain* of a paradigm: the syntagmatic context where the paradigmatic contrast applies. For the old Scandinavian languages, the semantic frame of word order was not argument status, nor syntactic relations, but information structure.

4.1 The iconic focus pattern of Middle Danish

Initially, all Old Scandinavian languages are verb second, but in relation to the non-finite verbs, they retain the possibility of OV-order, or more generally, XV-order, X being all types of DPs, predicatives and adverbials. The finite and the non-finite verb define three topological zones, a prefield preceding the finite verb, a middle field between the verbs and a postfield, following the non-finite verb. I illustrate this through examples of transitive constructions, namely (39) showing pronominal object + V, (40) showing full DP object + V and (41), pronominal object + full DP subject + V. In (42), I add an example of V + negation + subject + V, in which the object holds the initial position.

(39) Herræ ... , giff thætte barn toll,   at iach motte ok   henne see
      Herre ... , giv thætte barn thol,   at jak matte ok   hænne se
      Lord ... , give this   child endurance so that I   could also   her
      ændæ sith liff i   fulkomen troo,   som iech soa myn førmer dotter.
      ænde sit liv   i   fulkomen tro   sum jæk sa min førmer dotter.
      see   end REFL life in   perfect faith as I   saw my   former_(i.e.
      'Lord ..., give this child endurance so that I could see her, too, ending her
      life in perfect faith, like I saw my now late daughter.' (HellKv 85, 23-25)

(40) viste thu huilc myn hug æᴦ, thu hafde tesse ord icke melth
viste thu hvilk min hugh ær, thu havthe thæsse orth ække mælt
knew 2sg what my mind is, pron2sg had these words not uttered
'If you knew what I have in mind, you would not have uttered these words.'
(HellKv. 76, 22-23)

(41) thæᴦæ ma han hwærkin kunung nøthæ til oc ængin landz ræt
thære ma han hværken kunung nøthe til oc ængen lands ræt
there may he.acc neither king coerce to and no land's law
'To do this neither the king nor any law of the land may coerce him.' (DgL
V 75, 6-8)

(42) Thænnæ steen ma æi eld skathæ
Thænne sten ma æj eld skathe
this gem can not fire harm
'Not even fire can harm this gem.' (Harpestreng 191,13-14)

These examples document two points: 1) Focus operators such as *ække* 'not',
æj 'not', *ok* 'also' and *hværken* 'neither' define information structural subzones, a
background zone preceding the operator and a focus zone following it. 2) There
is no specific subject position, and like objects, a subject can be in focus position.
If there is no operator, the system predicts that an object or adverbial will precede
a focused subject. The relevant portions of text can be laid out topologically as
in Table 8.

Table 8: Information structure and word order in Middle Danish

Prefield	**V**	Middle field			**V**	**Postfield**
	V	**Background**	**Operator**	**Focus**	**V**	
jak	matte		ok	*hænne*	se	ænde sit liv
thu	havthe	*thæsse orth*$_{A2}$	ække		mælt	
thære	ma	*han*$_{A2}$	hværken	*kunung*$_{A1}$	nøthe	til …
thænne sten $_{A2}$	ma		æj	*eld* $_{A1}$	skathe	

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In Peircean terms, the finite and the nonfinite verb indicate the middle field, the zone for word order to manifest symbolic information structural meaning, the opposition of *background* versus *focus*. In analogy with morphological paradigms, a given member cannot manifest both meanings; however, this symbolic paradigmatic contrast must be mapped unto a linear sequence, and this iconic sequence (Heltoft 2019; 2003) is then indicated again by the position of focus operators. The indexical function of verbs and focus operators define the domain of the paradigm.

$$V \Rightarrow [\qquad\qquad\qquad \textbf{Middle field} \qquad\qquad\qquad] \Leftarrow V$$
$$V \Rightarrow [\textbf{Background positions} \Leftarrow \textbf{Operator} \Rightarrow \textbf{Focus position}] \Leftarrow V$$

Figure 1: Topological analysis of inactive clauses

Notice that there is no coded subject position. Subjects can occur anywhere in a clause, depending on the textual organisation. Again, what is structurally possible - not what is frequent - defines what is grammaticalised. No doubt, subjects in the 3rd position, immediately after the finite verb, have an overwhelmingly high frequency, but this fact can in all probability be derived from the fact that the A1s of the transitive system are very often lexically coded as Agents. At any rate, there is obviously no interlock between A1, 3rd position and subject, so the Middle Danish subject is clearly not topologically coded.

4.2 Inactive clauses follow the general pattern

In this subsection, I consider a number of examples illustrating the positional range of A1s and A2s. Since the domain of the paradigm is the middle field, special attention will be given to examples where both A1 and A2 are in this field. Examples (43) documents that A1 can hold the third position, A2 holding the open initial position; and vice versa, (18), partly repeated here as (44), documents initial A1 and 3rd positional A2.

(43) hon   thæktis   honum   migit væl
     hun $_{A2}$ thæk-t-es   honum $_{A1}$ miket væl
     she.NOM please-PRT-MIDDLE he.OBL   very much
     'She pleased him very much.' (SjT 53, 17)

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(44) hanum _{A1} thækk-er   thæt _{A2} [at han varther forsmath thær af
     he.OBL learn-3PRS.SG that   that he   becomes despised for   this
     fore   værden.] _{A2}
     reason for   the world
     'He learns he is despised for this by the world.'

(45) documents A2 preceding A1 in the middle field, (22)-(23) likewise, see above. For A1 preceding A2 in this context, see (13).

(45) a. … ganghe vthen   kiortell, giærne wille   iek giffwe tik myn enesthe
          … go   without tunic, gladly would I   give   you my   only
          kiortell.
          tunic.
          '… to be without a tunic. I would be glad to give you my only tunic.'

      b. Nw sømmer   thet mik   icke   oc   jek kan   ey fanghe
          Nu sømer   thæt _{A2}   mik _{A1} ække ok jæk   kan æj
          now befit-PRS.SG it.NOM me.OBL not   and I   cannot get any
          noghet andhet   klædhe
          fange noket   annet   klæthe.
          other garment .
          'Now this (anaphor = 'wearing no tunic') does not befit me and I
          cannot get any other garment.' (ML 407, 7-10)

(46) Theth ær æy megheth ath wel omgonges meth sakthmodugh ok gode
      Thæt ær æj miket   at væl umganges mæth saktmodugh ok gothe
      it   is not much   to well get_along with meek   and good
      meniske;   nattrulige   tha tækkes   theth alle
      mænneske;   naturlike   tha thækk-es   thæt_{A2} alle_{A1}
      human_beings; in_a_natural_way then please-PRS.SG.MIDDLE this   all
      'Getting along well with meek and good human beings is not much;… in a
      natural way, this is what all people like.' (Kempis 58, 14)

(47) hvat varthar thæt _{A2} [mik   æller thik]_{A1} [at the   hav-a
      what concerns it.NOM me.OBL or   2P.SG.OBL that they.NOM.PL have-PL
      æj vin]_{A2} thæt _{A2} varthar thæm _{A1} sum os   hava buthit ok æj
      not wine it.NOM concerns 3PL.OBL REL us.OBL have asked and not

os   [at   the hava æj vin.]$_{A2}$
us.OBL [that they have no wine]
'How does it concern me or you that they have no wine? It concerns
those who have invited us, and not us, that they have no wine.'

(48) Teckes   ether   naadhe, att theres egett budth   skall
      thækk-es   [ither   nathe]$_{A1}$ [at theres eghet buth*   skal
      please-PRS.SG.MIDDLE POSS.2PL grace   that their   own messenger should
      føræ breffwet fræm   tiill thee Lubskæ,   thaa staar thet i
      føre brevet   frem   til the lybske]$_{A2}$ tha star thæt i
      bring the_letter forward to   the people_of_Lübeck, then is   that in
      ether naades hendher; tæckes ether naade   ickæ thet,   tha haffwe
      ither nathes hænder; thækkes [ither nathe]$_{A1}$ ække thæt$_{A2}$ tha   have
      Your Grace's hands; pleases your grace   not this,   then have
      wii …
      vi …
      we …
      'If it pleases Your Grace that their own messenger should bring the letter
      forward to the people of Lübeck, then this in in Your Grace's hands; if
      Your Grace is not satisfied with this, then we have (…)' (29/2 1512 (Halm-
      stad; AarsberGeh VI, Till. 13)) [*The Swedes' own royal courier, whether
      he should be granted transfer through Denmark

A template including these examples is Table 9. Examples (22) and (45) have
both arguments in background position, the focus being on the adverb *mæst*
'most' in (22) and on the verb *sømer* 'is decent' in (45); examples (23), (46), and
(51 (=19b)) have their A1s in focus position, but (48), by contrast, has the A2 in
focus position.

The logic behind this does not include argument hierarchy or grammatical
relations, but the middle field contains a purely topological grammaticalised sys-
tem, consisting of focus and non-focus (background) positions, indexically iden-
tifiable through the position of the focus operators, esp. negation. Examples (45)
and (48) both contain the pronoun *thæt* 'that', in (45) in background position,
in (48) in focus position. The paradigm's coded contrast is between background
and focus, since a linguistic element cannot have both of these information struc-
tural values at a time. In this type of paradigm, the contrast is mapped onto the
syntagmatic axis, that is: onto word order, see further Heltoft (2019). The system

works without any assumptions of grammaticalised connections between topology (word order) on one hand and case morphology, argument hierarchy and subject-object articulation on the other. One could say this type of topological system is neutral with respect to transitivity and inactivity.

For a final argument, notice that in example (2), included in Table 9, the constituent in focus position is the deictic adverbial *nu* 'now'. The examples have mainly been of objects and subjects, but this position is also open to adverbials, should they be intended as the focused constituent.

Table 9: The topological frame for Modern Danish

Prefield 1.Pos	V V	Middle field Backgr.	Middle field Focus Op.	Middle field Focus	Postfield
hvi	angrer	thik$_{A1}$	æj	nu	[at … (2)
Nu	sømer	thæt$_{A2}$ mik$_{A1}$	ække		(45)
	thækkes	ether nathe$_{A1}$	ække	thæt$_{A2}$	(48)
Hvat	varther	thæt$_{A2}$		[mik æller tik]$_{A1}$	at… (17b)
Thæt$_{A2}$	varthar			thæm$_{A1}$ sum (…)	(17b)
(thæt $_{A2}$	varthar)		æj	os$_{A1}$	(17b)
hun$_{A2 \text{ nom}}$	thæktes	honum$_{A1 \text{ obl}}$		miket væl	(43)
i gardagh	thækktes	thu$_{A2 \text{ nom}}$ mik $_{A1 \text{ obl}}$		mæst	(22)
thær fore	thæktes	hwn$_{A2 \text{ nom}}$		gudh$_{A1}$	(23)
tha	thækkes	thæt$_{A2}$		alle$_{A1}$	(46)
	tethes		ække	ræghnbughe$_{A2}$ …	(14)
tha	tethes		e	noket tekn$_{A2}$	(15)

I have added examples (14)-(16c), in order to add to the number of subject A2s definitely not in the 3rd position.

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5 Categorical clause structure and the loss of indexical case

During the period app. 1400 - 1750 the inactive construction was reinterpreted as transitive constructions, including a shift in case marking aligning the relationship between arguments, grammatical relations and case selection. This actualisation process must be the topic of another study, and I will just give two examples by the same author, the lutheran bishop Palladius:

(49) derfor   bør   i   at haffue denne sted   och kirke
      derfor   bør   i   at have   denne sted   og kirke
      therefore ought.PRS.SG PRON2PL.NOM to hold   this   place and church
      kierist offuer alle andre steder i verden
      kjærest over   alle andre steder i verden
      dearest beyond all   other places in the_world
      'Therefore, you ought to hold this place and church dearer than anywhere
      else in this world.' (Palladius 38, 18-19)

In the very same text, we find the older construction in a sentence otherwise identical:

(50) derfor   bør   eder   att haffue denne sted   kierist
      derfor   bør   eder   at have   denne sted   kjærest
      therefore ought.PRS.SG PRON2PL.OBL to love   this   place the_most
      'Therefore, you ought to love this place the most.' (Palladius 39, 14)

The use of the nominative as the marker of the subject predicate was abolished during the 16th century. For the details of the distribution of case in this post-medieval period, see especially Jensen (2017; 2018), with supplementary overviews and details in Heltoft (2019) and Jørgensen (2000).

5.1 Modern subject topology

Returning to Melčuk's subject criteria, the difference between the medieval system and the modern one is striking. The modern language has a subject definable along parameters 1-3, and no longer by morphological binding by the finite verb. The subject is the only obligatory DP-constituent, in the sense that its positions must be filled in, if not by a referential DP, then by a formal marker (*det* 'it' or a deictic marker *der* 'there' or *her* 'here'), to facilitate the illocutionary system. A

feature not mentioned by Melčuk is the interdependence (*catataxis*, in Hjelmslevian terms, *exocentrism* in Bloomfield's) between finite verb and subject, a relational type and criterion normally disregarded in modern grammatical theories and schools. In contrast to the predicate valence system of the medieval language, these relations are solely between grammatical categories, thus defining clausal structure as subject vs. predicate (in the wider sense), so-called categorical sense structure, the presumedly universal DP-VP dichotomy. This structure is again mirrored in the modern sentence frame, in which the middle field has lost its positions for objects and valence bound PPs. These go into the postfield, mirroring the VP, subject positions illustrated by (51)-(53), a next to translation of (42). The focus operator *selv* is inserted to match better the meaning of (42), but it may well be let out.

(51) Denne ædelsten kan *selv ild* jo   ikke skade (subject in 3rd pos.)
      This   gem   can even fire PART not harm
      'This gem even fire - for sure - cannot harm.'

(52) * Denne ædelsten kan jo ikke selv ild skade   (no focus position)

(53)   Selv ild kan jo ikke skade denne ædelsten   (subject in initial pos.)

The topological frame of Modern Danish (Diderichsen 1946; Heltoft 1992) mirrors categorical clause structure, in that the middle field contains the definitorial subject position and the postfield the non-finite verb and the rest of the valence bound constituents.

Table 10: The topological frame for Modern Danish

Prefield	V		Middle field		V	Postfield	
1.pos	V	Subject	S-advb.	Focus Operator	V	IO	DO ...
Denne ædelsten	kan	selv ild	jo	ikke	skade		
Selv ild	kan		jo	ikke	skade	denne ædelsten	

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The modern word order paradigm and the role of the subject in this paradigm was mentioned in Section 1.2. Given the present preconditions of the analysis, the Middle Danish has nothing similar, and there is no cogent reason to assume any underlying categorical structure.

5.2 From indexical case to symbolic case

In symbolic case systems, case forms are self-dependent in the sense that their meaning can be identified on the basis of the case sign itself. When the indexical case system was lost with the inactive constructional alternation to transitivity, the nominative form (still only in the same handful of pronouns as before, see Table 2), lost its polysemy and could no longer carry semantic role meaning. It was left with the sole content of manifesting the subject function, in the sense of the argument that the VP is predicated about, the categorical subject. The Modern Danish nominative case has the content 'subject' in all contexts[22]. Indexical case systems call for reference to the governing verb and the constructional level of argument hierarchy in order to resolve the polysemy of the case forms and identify the referents. From Heltoft (2021b) I render this paradigmatic table, showing modern case meaning:

Table 11: Danish symbolic case paradigm in categorical sentence structure

Expression	Nominative	Oblique
Content	Subject (marked)	Non-subject (unmarked)

Notice that where the medieval transitive pattern had an unmarked nominative in relation to the relevant zones of semantic roles, the shift of content function leads to the reverse relation of a marked subject meaning in contrast to the non-subject function of the oblique case. In modern times, from app. 1900 forwards, the meaning of the nominative specialises even more, so that except for some formal registers, the nominative now means 'anaphoric subject' (Hansen 1967). The oblique form is used in subjects with all kinds of restrictive modifiers contributing to the identifiability of the subject referent, such as (54)-(55).

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[22]'All contexts' refer to all uses as 1st rank constituents as heads. I take examples such as the following to be 2nd rank constituents : Ham (obl) *og Peter kommer forbi i dag* 'him and Peter will pop by today'; *det er svært for mor og* jeg (nom) (lit. 'this is difficult for mummy and I').

(54) ham   der   er pusher
     he.OBL there is a   pusher
     'The guy there is a pusher.'

(55) hende   Marie er sød, ikke?
     she.OBL Marie er sød, ikke
     'This Marie is sweet, isn't she?'

Thus, within the frame of the symbolic case paradigm the nominative has again specialised, the oblique form 'bleached', see Table 12.

Table 12: Danish symbolic case paradigm adding phoricity to its content

Expression	Nominative	Oblique
Content	**Subject &**	**Non-anaphoric sub-jects**
	Anaphoric	**All non-subjects**

5.3 Positions indicate roles and arguments

In the modern language, arguments and grammatical relations have been aligned, so that all A1s are subjects and all A2s are direct objects. The indexicality of the case category in relation to the predicate is gone, the general rule being that all A1s are subjects and prototypical subjects – whatever the predicate's semantics – are in the nominative. The topological system has changed from a more open and free information structural system to a case-like system with specific positions for the subject, the direct object (and in fact, for the indirect object as well). In this system, the subject position indicates the predicate as the category and stem determining the A1 and its meaning, the direct object position indicates the A2, and the indirect object position the A3[23], with its more specific semantic role (Recipient).

The dimensions of linear position, case meaning and syntactic hierarchy have been aligned as definitorial criteria for the identification of subject and A1 in the modern language.

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[23]For a detailed analysis of the shift from symbolic to indexical function in the topology of the indirect object, see Nielsen & Heltoft (2020).

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6 Conclusion

Middle Danish with its very reduced case system still retains the indexical character of Germanic case. In spite of the case system's simple morphological expression side, its content side is very complex. Both cases, nominative and oblique, differ in meaning, depending on their constructional context: inactive and transitive constructions, and these constructions and their case differences are distinguished indexically. The predicate's stem must be checked in order to identify the relevant contextual variety (bound variant) of the case forms.

Grammatical relations (subjects and objects) were not aligned in Middle Danish (or in the Norse languages in general). The core actant A1 is the subject of transitive and intransitive constructions, but the object of inactive constructions, one-place or two-place. Both types are found with an additional A2, the oblique direct object of transitives, but a nominative subject in the inactive construction. Case assigns semantic roles according to the semantics of the predicate and the constructional pattern.

When the inactive construction was finally lost during the 18th century, the case paradigm also lost semantic roles as its content frame. In present-day Danish, the case system has turned symbolic, in that they code directly the relevant grammatical roles and argument status. Now, the nominative case in itself marks its status as subject and A1, the oblique form – now the unmarked form – has roughly the content non-subject and non-A1.

Topology (word order) has taken over the indexical function the case system had, but in a simpler version with no systematic polysemy. Positions, not case forms, point to the predicate stem.

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DgL V = *Danmarks gamle Landskabslove* V, *Eriks Sjællandske Lov*, ed. by Peter Skautrup. Copenhagen 1936.

Fragm = *Fragmenter af gammeldanske Haandskrifter*, ed. by Paul Diderichsen. Copenhagen: Schulz. 1931-37.

GldO = An electronically accessible, non-digitalised collection of excerpts for Gammeldansk Ordbog [Old Danish Dictionary]. https://gammeldanskseddelsamling.dk/

Harpestreng = *Harpestræng. Gamle danske Urtebøger, Stenbøger og Kogebøger.* Ed. by. Marius Kristensen. Copenhagen 1908-1920

HeiðrR = Heiðreks saga, ed. by Jón Helgason. Selskab til Udgivelse af gammel nordisk Litteratur 48. Copenhagen 1924.

HellKv = *De hellige Kvinder. En Legende-Samling*. Ed. by C.J. Brandt. Copenhagen 1859.

JBB = *Jesu Barndoms Bog*. Ghemen ca. 1508. *Danske Folkebøger* 1, Apokryfe Bibelhistorier, ed. by J.P. Jacobsen, 27-105. Copenhagen: Gyldendalske Boghandel Nordisk Forlag. 1915. Electronic edition: https://tekstnet.dk/jesu-barndomsbog/1. Det Danske Sprog- og Litteraturselskab.

Kempis = *Thomas a Kempis. Fire bøger om Kristi Efterfølgelse*, i dansk oversættelse fra 15. Århundrede, ed. by F. Rønning. Copenhagen 1884-85.

ClarB = *Clarus Saga ⊠ Clari fabella*, ed. and transl. by G. Cederschiöld (ed. & transl.). Festskrift till Kgl. Universitetet i Köpenhamn vid dess fyrahundra års jubileum i juni 1879 från Kgl. Carolinska Universitetet i Lund 1, Lund 1879.

Luc = Lucidarius. In *A Danish Teacher's Manual from the Mid-Fifteenth Century* (COD. AM 76, 8°). Ed. by S. Kroon et al. Lund: Lund University Press 1993.

Lægeb Thott = *En middelalderlig dansk Lægebog*. Ed. by Poul Hauberg. Copenhagen 1927.

Mandevilles Rejse i gammeldansk Oversættelse, ed. by M. Lorenzen. Copenhagen 1882.

Miss = *Missiver fra Chr. I's og Hans' Tid I-II*, ved W. Christensen. 1912-1914.

ML = *Mariager Legendehåndskrift*, ed. by Gunnar Knudsen, for Samfund til Udgivelse af gammel nordisk Litteratur. Copenhagen 1917-1930.

ONP = *Ordbog over det Norrøne Prosasprog / Old Norse Prose Dictionary*. Institut for Nordiske Studier og Sprogvidenskab. https://nors.ku.dk/forskning/arnamagnaeanske-samling/onp/. Copenhagen.

Palladius = *Visitatsbog*. Peder Palladius: *Danske Skrifter* V, ed. by Lis Jacobsen. Universitets-Jubilæets danske Samfund. Copenhagen 1925.

Post = Postil i Uppsala. In *Svenska Medeltids-postillor* III, ed. by G.E. Klemming. Stockholm: P.A. Norstedts & söner. 1873.

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RD = *Romantisk Digtning fra Middelalderen* I-III, ed. by C. J. Brandt. Copenhagen 1869-77.

SjT = *Sjælens Trøst.* Consolatio animae, ed. by Niels Nielsen. Universitets-Jubilæets danske Samfund. Copenhagen 1937-52.

Sydr = *Sydrak.* Efter haandskriftet Ny kgl. Samling 236, 4to, ed. by Gunnar Knudsen. Universitets-Jubilæets danske Samfund. Copenhagen 1921-32.

Tacitus Germ. = *Tacitus* I. *Germania.* Translated by M. Hutton, rev. by E.H. Warmington. Loeb Classical Library 35. 1970[1914].

Thord Degn text 2 = *Danmarks gamle Landskabslove* IV. *Tillæg til Bind IV. Thord Degns Artikler*, Text 2)

VejlPilgr = [A Pilgrim's Manual], from *Mandevilles Rejser*, ed. by M. Lorenzen, 207-225.

AarsberGeh = *Aarsberetninger fra Det kgl. Geheimearchiv* I-VII, ed. by Wegener. 1852-1882.

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Chapter 8

The Dutch modals, a paradigm?

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This paper addresses the question how to define the notion of a "paradigm", as a cognitively real phenomenon. The discussion is based on the case of a set of forms from a linguistic class that is not part of the traditional domain of "paradigmhood" (i.e. inflectional morphology): the modal auxiliaries in Dutch. The paper presents the results of a few studies into the diachronic evolution of these forms, grammatically and semantically, showing how a subset of them has gradually accumulated shared features and developed an internal division of labor, thus displaying active group behavior.

1 Introduction

In this paper we address the question how to define the notion of a "paradigm", as a cognitively real phenomenon. We do so by means of the concrete case of a set of forms that may arguably be classified as a paradigm, from a linguistic form class that does not belong in the traditional domain of "paradigmhood" (i.e. inflectional morphology): the modal auxiliaries in Dutch. We present the results of a few studies into the diachronic evolution of these forms, grammatically and semantically, showing how a subset of them has gradually accumulated shared

features and developed an internal division of labor, thus displaying active group behavior.

The paper is organized as follows. In Section 2 we address the issue of how to define a paradigm, as a cognitively real phenomenon. In Section 3 we briefly lay out the methodology used in the studies into the diachronic evolution of the Dutch modals. Section 4 presents a birds-eye overview of the grammatical evolutions in this set of verbs. Section 5 surveys the semantic developments. In Section 6 we formulate the conclusions.

2 Paradigms

One of the central issues addressed in the present volume is: how cognitively real is the concept of a linguistic paradigm? The only way to answer this question is to look at the linguistic behavior of the members of a candidate for the label.

This, however, invokes another crucial, and maybe more controversial, issue: what are the necessary and sufficient conditions for categorizing a set of forms as a paradigm? We assume that a diagnosis should be based on three very elementary criteria: (i) Do the forms share properties or characteristics, and do they show a tendency towards increasing convergence over time? (ii) Is there a kind of internal organization within the group of forms, and do the members show developments sensitive to it, for instance in view of optimizing the division of labor between them? And (iii) does the set of forms occupy a distinct position, structurally and/or functionally, in the overall linguistic system of the language?

If the answer to at least some of these questions is "sufficiently positive" (see below), one is entitled to call the set of forms a paradigm. Moreover, one then has to consider it cognitively real: it is demonstrably a significant element in the organization of the verbal behavior produced by the cognitive systems for language use implemented in the brains of the speakers of the language, hence it is somehow "represented" in the latter (in a non-literal sense of "represented": it somehow has a specific, recognizable status in the language users' "cognitive grammar").

This answer raises at least three new questions, however, to which the answer is in part less straightforward.

First of all, what is a "sufficiently positive" answer to the above questions? How many and what kinds of features and tendencies do the forms have to share in order for the set to be called a paradigm? How stringent does the internal organization of the set have to be? How distinct should it be in the overall linguistic system? This may be the wrong way to formulate the issue, though: paradigmhood

is not a black-and-white matter, but a graded one (hence the concept of "necessary and sufficient conditions" for paradigmhood is quite relative). Paradigms come in degrees of integration, internal organization, and distinctness in the linguistic system, and there is no hard cut-off point for membership of the category. This corresponds to how paradigms come into existence diachronically. They do not appear all of a sudden in one fell swoop. They emerge and develop gradually, potentially over a long period of time (and they will also gradually and slowly disintegrate and disappear again). It is pointless to try to determine one specific point on this developmental "cline" at which paradigmhood starts/stops.

Secondly, what types of sets of linguistic forms may be considered candidates for paradigmhood? The notion of a paradigm is traditionally more or less confined to obligatory inflectional systems in a language (cf. e.g. Diewald & Smirnova 2010; Blevins 2015). These nearly automatically satisfy the criteria of sharing sufficient features, showing a stringent internal organization, and taking a distinct position in the overall linguistic system of the language. Yet the definition of a paradigm in terms of the above diagnostic criteria does not imply in any way that only an inflectional system, or only an obligatory system, can count as such. There is no reason why other types of linguistic forms could not fulfil the criteria for paradigmhood as well, including non-inflectional grammatical forms such as auxiliaries, or forms of which the status as grammatical vs lexical is controversial such as adverbs and adjectives (cf. e.g. the modal adverbs/adjectives in languages), or even clearly lexical categories such as main verbs (cf. e.g. the perception verbs, communication verbs, or mental state verbs in languages), even if these are hardly ever obligatory elements in the grammar of a language. The fact that, diachronically, inflection often emerges from auxiliaries, which in turn typically develop out of main verbs (i.e. one of the classical examples of a grammaticalization path), further underscores this point (cf. the preceding issue regarding the gradual emergence of paradigms).

This raises a third question, pertaining to another central issue addressed in this volume: is there a necessary link between paradigms and grammaticalization? Probably not. There is a tendency in the literature to strongly associate paradigms with grammaticalization processes (cf. the fact that Lehmann 1982 considers paradigmatization a key feature of grammaticalization; see e.g. Diewald 2009; Nørgård-Sørensen et al. 2011). This is to a large extent justified: grammaticalization typically does result in, and may even be the most important trigger for, the formation of paradigms (all inflectional paradigms are due to grammaticalization). (This, however, raises a chicken-and-egg question: does the strive in a linguistic system to form paradigms trigger grammaticalization, or is the formation of paradigms a side-effect of grammaticalization?) Nevertheless,

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there is nothing in the three diagnostic criteria implying that the formation of paradigms must necessarily always involve grammaticalization.[1]

In this paper we offer an example of a set of forms that may arguably be called a paradigm and that demonstrates the import of the three questions just raised. It concerns a grammatical system in a domain other than inflection, which illustrates the gradualness of the notion of a paradigm as defined in terms of the three diagnostic criteria mentioned earlier, and which shows that grammaticalization is not a necessary correlate of paradigmhood. Our casus belli is the set of modal auxiliaries in Dutch. In the traditional view there are six such verbs in the language: *kunnen* 'can', *mogen* 'may', *moeten* 'must', *hoeven* 'need', *zullen* 'shall/will', and *willen* 'will/want' (see e.g. Duinhoven 1997: 383ff). Corpus investigations into the diachronic evolution of these verbs reveal that four of them, *kunnen*, *mogen*, *moeten* and *hoeven*, do show systematic behavior, with a tendency to increase and strengthen shared properties over time, grammatically as well as semantically, while at the same time avoiding functional "conflict" within the set. The other two verbs, *zullen* and *willen*, do not participate in these evolutions. In this paper we will present an overview of the facts to this effect.

3 Data

The considerations in this paper are predominantly based on corpus studies into the grammatical and (in part) the semantic developments of the six modal verbs. Although we will only offer a summary overview of the observations from these studies relevant for our present purpose, we should briefly sketch the method applied in them (more details can be found in the references given below).

Our primary source of information are investigations into the global evolution of each of the six modal verbs from the earliest known documents till the present (see Nuyts 2013; Byloo & Nuyts 2014; Nuyts & Byloo 2015; Nuyts et al. 2018; In preparation). These studies all used the same method and analytical categories.

They compared the grammatical and, in part (see below), the semantic properties of the verbs in samples of (in principle) 200 instances per modal from four

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[1]Some authors would seem to consider grammaticalization a necessary condition for a set of forms to be called a paradigm. We do not adopt this perspective. Paradigmhood is a basic analytical notion, required to describe a type of pattern observable in collections of forms in a language. Tying it up with another analytical notion, in casu grammaticalization, means reducing its value as a descriptive notion (and in a way even means making it superfluous, since what it describes is also covered by the notion of grammaticalization). It also means that if one encounters sets of non-grammaticalized forms with essentially the same basic properties (in terms of the criteria specified earlier), one needs to introduce another term for these, and one thereby looses the generalization that one is dealing with the same basic phenomenon.

main "time slices" (based on the generally accepted division in main stages in the history of the language): Old Dutch (OD, > 1150), Early Middle Dutch (EMD, 1250–1300, the start of the Middle Dutch period), Early New Dutch (END, 1550–1650, the start of the New Dutch period), and Present Day Dutch (PDD, < 1950).[2] For PDD the studies worked with separate samples of 200 instances for the written language (PDDW) and the spoken language (PDDS).

The samples were drawn from a self-compiled balanced corpus of materials covering these periods. The selection of texts for inclusion in the corpus, and of instances for the samples, was based on criteria such as representativity (in terms of text genres and regional spreading, among others) and comparability across the periods. Within these confines, the selection was random.

The data were analyzed paying due attention to inter-rater-reliability and making use of statistical tools (Fisher Exact and the Spearman Rank Coefficient of Correlation).

As a secondary source, we will occasionally refer to a follow-up study which focused on the grammatical developments from END onwards in *kunnen*, *mogen*, *moeten* and *hoeven* (see Nuyts & Caers 2021). In comparison with the earlier studies, it considered an additional language stage, half way between the stages of END and PDD, labeled New Dutch (ND, 1750–1850), and it worked with much larger samples of (in principle) 1000 instances. Otherwise the methodology was the same as in the earlier studies.

In this paper we will only present the relevant headlines emerging from these studies. For the full story (including tables with detailed frequency information) the reader is referred to the publications mentioned above.

The semantic evolution of *zullen* and *willen* was not investigated in the studies mentioned. Our discussion of this issue in Section 5 is based on the information about these verbs provided in the major general and historical dictionaries for Dutch: the *Oudnederlands woordenboek 2012* for OD, the *Vroegmiddelnederlands woordenboek* (Pijnenburg et al. 2000)) for EMD, the *Middelnederlandsch woordenboek* (Verwijs Verdam 1885-1929) for Middle Dutch, and the *Woordenboek der Nederlandsche taal* (De De Vries & Te Winkel 1864-1998) for the developments from Middle Dutch till the 20th Century.

All examples provided in this paper are from the corpus data used in the studies mentioned above (they were not necessarily cited in the publications, though). The sample from which they were taken (OD, EMD, END, etc.) is mentioned

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[2]There is some dispute over the precise temporal demarcation of the stages, the studies followed van den Toorn et al. (eds. 1997). Occasionally samples are smaller than 200, because the materials for the period did not contain more instances of the modal.

between brackets after the example. The relevant form is boldfaced. In examples from the spoken data we maintain the transcription conventions used in the source corpus (no capitals, no punctuation, etc.; the spoken samples were drawn from the *Corpus Gesproken Nederlands* 2004), but the transcript has occasionally been simplified somewhat by omitting, among others, irrelevant pause fillers, repetitions, or back channel cues (without this being marked in the example).

4 The grammatical developments

The grammatical developments of the modals, from OD till PDD, were outlined and discussed in detail in Nuyts (2013) for *kunnen*, *mogen* and *moeten*, in Nuyts et al. (2018) for *hoeven*, and in Nuyts et al. (In preparation) for *zullen* and *willen*.

Like most auxiliaries in the languages of the world, the Dutch modals have all emerged from main verbs through a regular process of grammaticalization (Hopper & Traugott 2003). (See further below in this section on the definition of the main verbal vs auxiliary status of the modals.) *Kunnen*, *mogen*, *moeten* and *zullen* are preterit-presents, verbs of which the current present tense stem was originally the past tense stem. *Hoeven* and *willen*, however, are not (although *willen* has adopted some of the characteristics of the preterit-presents, see De Vries & Te Winkel (1864)). The timing of the evolution towards an auxiliary is not the same in all the verbs, however.

In *mogen*, *moeten* and *zullen* the auxiliarization process is more or less completed already in the OD sources. There is no trace of the original main verbal use of *zullen* (which meant 'to owe something (to someone)') in our data for any of the periods.[3] In the data for *mogen* and *moeten* (which originally meant, respectively, 'to have power' and, probably, 'to measure') there are possible relics of the original main verb (with a substantially different meaning, though), even until today. But these are marginal, in all time slots, and these modals, too, were nearly exclusively auxiliary already in OD and EMD.

In *kunnen*, however, the auxiliarization process is in full course in OD and EMD. The auxiliary use is already dominant then, but the old main verbal use, with the meaning 'to know', is still prominently present. It even exists until today, even if it is fairly rare now – (1) is a PDD example.

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[3]The *Oudnederlands woordenboek 2012* mentions one single instance, occurring in the *Mittelfränkische Reimbibel*. The linguistic status of this text is under dispute, however (Old Dutch or Old High German?). For that reason it was not included in the data in Nuyts et al. (In preparation).

(1) hij **kon** al   een beetje Spaans (PDDS)
     he could already a bit   Spanish
     [lit.] "He could some Spanish already." [i.e.] "He already knew some
     Spanish."

In *hoeven* the evolution is even more recent. This modal has only emerged
around the start of the END period, out of the main verb *behoeven*, which meant,
and still means, 'to need'. *Hoeven* shows clear traces of its main verbal origins
until today, illustrated in (2) (*hoeven* can be replaced freely by *behoeven* in the
example). Nevertheless, from its conception in END onwards it predominantly
behaves as an auxiliary.

(2) Anderen vonden oplossingen: ze   lezen grootgedrukte boeken of
     others   found solutions   they read large.print   books   or
     kijken enkel naar Nederlands gesproken programma's waarvoor ze
     watch only to   Dutch   spoken   programs   for.which they
     geen ondertitels **hoeven**. (PDDW)
     no   subtitles   need

     "Others [elderly people with poor eye sight] found solutions: they read
     books in large print or only watch programs spoken in Dutch for which
     they do not need subtitles."

Willen, finally, is predominantly an auxiliary from the oldest sources onwards,
but the original main verbal use, meaning 'to wish', 'to desire', was still very
prominent in EMD, and, even if declining through time, remains present until
today. (3) is an example.

(3) Ik heb deze situatie   niet **gewild**. (PDDW)
     I have this situation not wanted
     "I did not want this situation."

In sum, in terms of its origins the set of modal verbs in Dutch (as traditionally
conceived) emerged only very gradually and unsystematically.

In more recent grammatical developments, however, a subpart of the tradi-
tional set (if it has ever been a real set at all)[4] – specifically, *kunnen*, *mogen*,
moeten and *hoeven* – starts to behave in a very similar way, both in terms of the

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[4]There are many more auxiliary verbs in Dutch, hence the fact alone that the six modal verbs
have auxiliarized is not sufficient to call them a paradigm. As we will argue in Section 5, the
semantic criterion often adduced for considering them a system is not convincing either.

direction and of the timing of the changes. *Zullen* and *willen*, however, do not participate in the evolutions, or at least not clearly so. The fact that it concerns quite remarkable developments makes the observation even more significant.

Thus, in the course of the New Dutch period, *kunnen, mogen, moeten* and *hoeven* start showing a distinct tendency to regain independence, and to get used again as an autonomous verb in the clause.[5] Moreover, the properties of the new autonomous uses are exactly the same in all four verbs. Strongly simplifying matters, these uses come in two main types.

On the one hand there are instances that are presumably still auxiliary, but with an elided main verb. Very occasionally, the elision is due to the fact that the implied main verb has been mentioned in the preceding clause, as in (4) (the elided main verb is [*in de tuin*] *werken* 'work [in the garden]'). In by far most cases, the implied main verb has not been mentioned in the preceding discourse, but is more or less clearly imaginable, as in (5) and (6) (in both examples the main verb *gaan* 'go' is understood).

(4) weet je waar da'k zin   in heb in de tuin   te werken maar ja
     know you where that.I desire in have in the garden to work   but   yes
     'k heb geen gerief dus 'k **kan** niet (PDDS)
     I have no   tools so I can not
     "You know what I'd like to do, work in the garden. But I have no tools so I can't [elided: work in the garden]."

(5) die   op vijfentwintig zes geboren zijn die   **mogen** niet mee (PDDS)
     those on twenty.five   six born   are those may   not with
     [lit.] "Those born on June 25th may not [implied: go] along." [i.e.] "Those … may not join."

(6) je **moet** ook weer met de mode   en met de kleur mee (PDDS)
     you must also again with the fashion and with the color with
     [lit.] "You must [implied: go] along with fashion and with the colors."
     [i.e.] "You must follow fashion and the popular colors."

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[5]These changes make these four modal verbs in Dutch very different from their equivalents even in closely related languages such as English and German, which do not show comparable developments. They make them special even among the world's languages, since we appear to be dealing with a process of collective degrammaticalization, considered highly unusual in the literature (cf. Norde 2009; see Nuyts 2013, Nuyts & Caers 2021 for discussion of this issue).

The fully implicit type in (5) and (6) is special, though, and differs from the contextual type in (4), in that making the implied main verb explicit usually sounds unnatural and forced to native speakers. The sentence simply feels better without it. Also note that elision of the kind in (5) and (6) is impossible in English, unlike that in (4).[6] Possibly, the position of the main verb is getting unstable in these uses, and the modal verb is regaining independence.

On the other hand, there are autonomous instances in which one cannot imagine a main verb next to the modal verb anymore, as in (7) and (8). In such cases, the modal itself must be considered the main verb of the clause.[7]

(7) Wat u doet **kan** helemaal niet, een klooster bouwen op het
what you do can at.all not a monastery build on the
grootste Joodse kerkhof ter wereld! (PDDW)
biggest Jewish cemetery on earth

[lit.] "What you are doing cannot at all, building a monastery on the
largest Jewish cemetery on earth!" [i.e.] "What you are doing is totally
unacceptable, ..."

(8) En rijdt er tussen het feestgedruis door toch nog
and rides there between the festivities through nevertheless still
soms eens een trein, dan is dat mooi meegenomen. Maar het
sometimes once a train then is that nicely taken.along but it
hoeft niet meer per se. (PDDW)
need not anymore per se

[lit.] "And if there is occasionally still a train during the festivities, that is

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[6]The use of a modal without a main verb in the clause (without the latter having been mentioned in the preceding discourse) is to some extent possible in other Germanic languages, including German. Usually this concerns the elision of a motion verb in the presence of a directional phrase, as in German *ich muss jetzt nach Hause* [lit.] 'I must [implied: go] home now'. The possibilities to omit the main verb in Dutch extend far beyond those in German or other Germanic languages, however (instances such as (5) or (6), e.g., would seem impossible in German). The presence of a directional is not required. Main verbal uses of the type in (7)-(8) below would even seem entirely absent in other Germanic languages (and these never feature directionals). (See Nuyts & Caers 2021 on the role of directionals in the re-autonomization process in the Dutch modals.)

[7]There is not a sharp borderline between the autonomous uses of the type with an elided main verb and the main verbal type. There are quite a few cases of doubt between the two in the data. This may not be accidental, but may be a sign of a diachronic relationship: presumably, if a verb changes from an auxiliary to a main verbal status, or vice versa, it passes through the stage with an implied main verb.

> an asset. But it need not absolutely anymore." [i.e.] "... But it is not absolutely necessary/indispensable anymore."

The overwhelming majority of these new main verbal uses – including the examples in (7) and (8) – has a valency pattern that is very different from that of the original main verbal uses illustrated in (1) and (2) above (hence these new main verbs cannot be considered a continuation of the original main verbs, i.e. the development is not a case of "retraction" in Haspelmath (2004)'s sense). The original main verbs are transitive, in all four modals, with a first argument referring to an entity, very often a living being. But the new main verbal uses of the four modals are nearly always intransitive, and their only argument refers to a state of affairs, deictically, or in a complement clause or an equivalent. The difference between the old and the new main verbal use is illustrated again for *kunnen* in (respectively) (9) and (10).[8]

(9) Dat voel liede   sijn die en   geen latijn en **conen** noch en
     that many people are who not? no   Latin not can   nor   not
     verstaen.   (EMD)
     understand
     [lit.] "That there are many people who can nor understand Latin." [i.e.]
     "That there are many people who do not know or understand Latin."

(10) iemand   van twintig die beroemd wil   worden dat **kan** op allerlei
     somebody of   twenty who famous   wants become that can on various
     manieren (PDDS)
     ways
     [lit.] "Someone aged twenty who wants to become famous, that can in
     different ways." [i.e.] "..., that is possible in different ways."

There are minor differences between the four modals participating in the re-autonomization process, in terms of the precise timing and/or in terms of how intensively they participate in the developments, as the follow-up study in Nuyts

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[8] The old and new main verbs are also semantically different. The original meaning of the old main verbal uses (mentioned earlier in this section) is entirely absent in the new main verbs. The latter exclusively feature modal and related meanings: sometimes they express dynamic modality, as in example (10), or in (8) above, but they are much more often deontic modal, as in (7) above, or directive (expressing a permission or obligation). (See Section 5 on these meanings; and see Nuyts 2013 for a more elaborate discussion of the meaning difference between the old and new main verbal uses of the modals.)

& Caers (2021) has shown (cf. Section 3). The process has started after 1850 in *kunnen*, *mogen* and *moeten*, but already between 1750 and 1850 in *hoeven* (parallel with the ongoing process of auxiliarization in this modal, which only started in END). Moreover, the increase in frequency of the autonomous uses is very substantial in all four verbs (it is statistically highly significant in all of them), but it is most prominent in *hoeven*, followed by *kunnen* in the written data, but by *mogen* in the spoken data, and it is overall weakest in *moeten*.[9]

In spite of these small differences, there is a clear common line in the – from a regular grammaticalization perspective quite unexpected – developments in these four modals. They appear to behave as a system, displaying a collective dynamics, in which analogy between the individual members may play an important role.[10]

Zullen and *willen* do not show a comparable evolution, however. *Zullen* does have a new autonomous use, as illustrated in (11).

(11)   ik weet niet of   ie 't heel druk heeft maar 't **zal** wel   (PDDS)
        I   know not whether he it very busy has   but   it shall rather
        [lit.] "I do not know whether he is very busy but it probably will [implied: be] so." [i.e.] "... but he probably is."

It only occurs in the PDDS data, however, and it is very marginal even there (2% of the instances). It is moreover exclusively of the type with an implied main verb, so these instances are arguably still auxiliary. Also, it exclusively occurs in combination with the modal particle *wel*, as in (11). Maybe the few cases in the data indicate that this verb will ultimately join the others in the process of re-autonomization, but if so, it is at least highly reluctant to do so.

Willen also shows autonomous uses, but it featured them from the earliest documents onwards (their frequency fluctuates through time), and these uses have not changed in nature over time. They are all remains of the original main

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[9] See the references given earlier for detailed frequency data. To give an impression of the figures: in the data in Nuyts & Caers (2021), in *hoeven* the new autonomous uses jump from app. 1% of all occurrences of the modal in END to slightly over 8% in ND and PDDW and to more than 28% in PDDS. (See Nuyts 2013 and Nuyts & Caers 2021 for arguments why the more drastic increase in the spoken PDD data, which occurs in all four modals, is not due to sloppiness but signals the direction into which the language is evolving.)

[10] The timing and intensity of the process in the four forms would seem to suggest that *hoeven* has the leading role in it. Yet the question is how this is compatible with the fact that this is by far the youngest among the modals, still in the process of auxiliarizing in the relevant period, as well as with the fact that it is much less frequent than the other modals, and occupies a special position among them as a negative polarity item. These remain open questions.

verbal use of the verb. New main verbal uses of the kind in (7) and (8) (or of any other type) do not occur, in any of the time slices, not even in the PDDS data. Hence this verb shows no signs of a participation in the group dynamics characterizing *kunnen*, *mogen*, *moeten* and *hoeven*.

5 The semantic developments

The semantic developments, from OD till the present, are discussed in detail in Byloo & Nuyts (2014) and Nuyts & Byloo (2015) for *kunnen*, *mogen* and *moeten*, and in Nuyts et al. (2018) for *hoeven*. We have not made an equivalent diachronic meaning analysis for *zullen* and *willen*. Yet the rough outline of the semantic profile of these verbs in different stages of Dutch emerging from the historical dictionaries (see Section 3) will suffice for the present purpose.

The semantic developments in the different verbs perfectly mirror the grammatical ones described in Section 4: *kunnen*, *mogen*, *moeten* and *hoeven* show similar evolutions, but these are not shared, or at least not to the same extent, by *zullen* and *willen*.

Although the original main verbs from which *kunnen*, *mogen*, *moeten*, and *hoeven* emerged had quite different meanings (cf. Section 4: resp. 'know', 'have power', 'measure', and 'need'), as auxiliaries these verbs have developed more or less the same full range of modal and related meanings typically associated with modal verbs in the languages of the world (see Nuyts 2006; 2016 for elaborate definitions and discussion). This includes, in all four verbs, different types of dynamic modal meanings (an ascription of a capacity or possibility, or of a need or necessity, to a participant in the state of affairs, or of a potential or inevitability to the state of affairs as a whole), as in (12) (see also (4), (8) and (10) above).

(12) kijk als gij   een huishouden hebt en   ge   **moet** nog vanalles
      look if you a   household   have and you must still different.things
      d'rbij   doen dan is 't heel   wat   anders he   (PDDS)
      on.top.of.it do   then is it entirely something else   right
      "Look, if you are managing a household and you have to do several things on top of it, then you have a different story, right?"

It includes a deontic modal meaning in all four verbs (an assessment of the degree of moral acceptability of the state of affairs), as in (13) (see also (6) and (7) above).

(13) We onderzoeken nu   de authenticiteit van de lak   en of deze
      we investigate   now the authenticity   of   the paint and if this
      geretoucheerd is. Bij zo'n   dure   aankoop **mag** je geen
      retouched   is with such.an expensive acquisition may you no
      risico nemen. (PDDW) "We are now investigating whether the paint is
      risk   take
      authentic and has not been retouched. When buying something so
      expensive one shouldn't [lit. may not] take a risk."

Three of the four verbs have also developed an epistemic modal or inferential
(evidential) meaning (an assessment of, respectively, the degree of likelihood of
the state of affairs, or the degree of reliability of the information resulting in the
postulation of the state of affairs), as in (14) (the inferential meaning occurs in
moeten, the epistemic one in the other verbs). This meaning type is missing in
hoeven – but it is also a very minor one in the three other verbs (in *mogen* it has
even disappeared again in PDD).

(14) Iets   minder zon morgen, en er   **kan** een buitje   vallen.
      somewhat less   sun tomorrow and there can a   small.shower fall
      (PDDW)

      "Somewhat less sunny tomorrow, and there may be an occasional
      shower."

All four verbs have moreover acquired a directive meaning (marking a permis-
sion, obligation, advice, etc.), as in (15) (see also (5) above).[11]

(15) ik heb begrepen   dat 't in het paspoort niet **hoeft** te worden
      I have understood that it in the passport not need to become
      ingeschreven dus als je   dat geheim wilt houden kan dat (PDDS)
      registered   so if you that secret want keep   can that
      "I understand that it [one's marital status] need not be mentioned in the
      passport [i.e. it is not compulsory], hence if you want to keep it secret
      that is possible."

Finally, three of the verbs have developed a volitional meaning (expressing a
wish), as in (16). This use is missing in *kunnen*, but it is also minor in the other

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[11]Directivity is often considered part of deontic modality, but there are good arguments to keep
the two categories separated. See Nuyts et al. (2010). This is of no further importance here.

three verbs.[12]

(16) dat zijn gedemodeerde spullen dat je   zegt ja   dat **hoef** ik niet
     that are old-fashioned things that you say yes that need I   not
     meer   hé   dat **moet** ik niet meer   hebben in feite (PDDS)
     anymore right that must I   not anymore have   in fact
     "Those are old-fashioned things, so you think 'I don't want [lit. need]
     them anymore', right, 'I don't want to [lit. must] own them anymore',
     essentially."

There are considerable differences between the four verbs in terms of when, and how fast, the developments towards these different meanings have happened. In *mogen* and *moeten* the full range of modal and related meanings sketched above is already present in OD and EMD, and the original main verbal meaning is obsolete even then. In *kunnen* a considerable part of the developments happened after OD and EMD. Only the dynamic modal meanings are present then, along with the original meaning 'to know'. The deontic, epistemic and directive meanings emerge in the course of the evolutions towards END and PDD. In *hoeven*, finally, the evolution happens helter-skelter: all modal and related meanings emerge more or less simultaneously, at the moment when the form arises as an auxiliary, around the start of the END period. These uses immediately assume a dominant position in the semantic profile of the verb, and they gain further ground in the course of the New Dutch period.

In sum, there appears to have been a semantic "unification" process among these four verbs, aiming to form a linguistic system that allows the expression of complementary meanings within the same range of modal and related semantic dimensions. The process seems to have stepped up after *kunnen* joined *mogen* and *moeten*: it stands to reason that the blitz evolution in *hoeven* is due to a strive in this form to semantically adapt as quickly as possible to the profile of the other three forms. It is significant that the re-autonomization process in the system, as described in Section 4, sets in while the semantic evolution in *hoeven* is still in full progress. This confirms that the four verbs at least from then onwards behave as a full-fledged paradigm.

There are indications that interactions between the members of the set already started much earlier, however. There are, for instance, semantic changes in the four verbs that may be the result of a tendency to avoid synonymy between them, within the range of meanings they share (cf. Nuyts & Byloo 2015). Thus, *moeten*

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[12]Next to the meanings and uses mentioned above, some of the modals have developed yet other minor ones.

has evolved from a weak modal (expressing ability, possibility, potential, etc.) to a strong modal (expressing need, necessity, inevitability, etc.) in OD (with last traces of the process in early EMD), possibly in order to avoid semantic overlap with weak *mogen*. Weak *kunnen* has gradually taken over meanings from weak *mogen* from OD and EMD onwards, which may explain why since then *mogen* is increasingly focusing on its directive meaning of permission. And strong *hoeven* may have developed into a negative polarity item (a process which started immediately when this modal emerged around the beginning of the END period) in order to avoid conflict with strong *moeten* (which subsequently has come to dislike negative contexts in PDD).

Zullen and *willen*, however, do not seem to participate in the systematic semantic evolutions observed in *kunnen*, *mogen*, *moeten* and *hoeven.*

The earliest meaning evolutions in *zullen* happened before the time of the oldest documents, hence they are unknown. But from OD onwards, and continuously until today, this verb predominantly expresses a temporal meaning, as the marker of the future tense in Dutch. (17) is an EMD example (from Pijnenburg et al. eds. 2000, entry "sullen" in the online edition).

(17) Wi debroeders ende desustre   van sente ians   hus   jn ghent doen
      we the.brothers and   the.sisters of   Saint John's house in Ghent do
      cont   alledenghenen die   dese letteren **sullen** zien dat …
      announcement all.those   who these letters   shall see that
      "We, brothers and sisters of Saint John's house in Ghent, announce to all
      those who will see this letter, that …"

This verb probably never developed a dynamic modal meaning (the *Oudnederlands woordenboek* 2012 offers one or two ambiguous examples in which one of the meanings could possibly be situational necessity, as a special type of dynamic modality). In OD and EMD it also featured a deontic and a directive meaning.[13]

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[13]In the literature it is often suggested that the temporal meaning (future) emerged from the deontic and/or directive meaning in this verb (see e.g. Duinhoven 1997: 428; a similar claim has been made regarding English *shall*, cf. Bybee & Pagliuca 1987; Bybee et al. 1991). Yet authors do not provide proof for this assumption: they only cite individual instances that existed side by side in the oldest documented stages of the language, but they do not offer evidence that demonstrates a diachronic order between the meanings. It is perfectly imaginable that both meaning types developed in a parallel evolution out of the original main verbal meaning 'to owe something (to someone)'. The development from the original meaning directly to the future meaning involves a straightforward metonymic path. If one owes someone something, this implies that one has to do something in the future to settle one's debt. The change to the future meaning is a small step (it follows the same logic as that offered in the literature for the

How important these were is hard to assess: the dictionaries offer numerous examples, but many or most of them can just as well be interpreted temporally. Moreover, these meanings have more or less disappeared since then (the directive meaning is still mentioned in dictionaries for the present day language, but the examples sound fairly archaic). The verb did develop an epistemic meaning (cf. (11) above), but the source is no doubt the temporal meaning (since the future is inherently uncertain, markers of the future generally show a strong tendency to acquire an epistemic meaning). This is unlike the epistemic (or evidential) meaning in the other modals, which emerged from other modal meanings (most probably from the dynamic modal ones, see Byloo & Nuyts 2014).

Willen does not seem to have had any distinct meanings other than the present: from OD onwards it marks a wish or desire, i.e. volition. (18) is an EMD illustration (from Pijnenburg et al. eds. 2000, entry "willen" in the online edition).

(18) Aldaer si   tesamen waren, so sprac Symon Petrus: Jc **wille** gaen
      when   they together were   so said   Simon Petrus I want go
      veschen.
      fish
      "When they were together, Simon Petrus said: I want to go fishing."

The dictionaries do mention some other meanings, but these can more or less all be accounted for as contextual implicatures from the volitional meaning.[14] In any case, the verb never developed any of the prototypical modal and related meanings central in *kunnen*, *mogen*, *moeten* and *hoeven*, such as a dynamic, deontic or epistemic/inferential one. As indicated above, volition also occurs as a

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presumed change from a directive to a future meaning). Offering formal proof for one or the other scenario may be impossible, however, at least for Dutch, since these meanings emerged before the oldest documents.

[14]For example, Pijnenburg et al. (eds. 2000) mention 'to demand' as a meaning in EMD (i.e. directivity), but from the examples it is obvious that this always concerns a use of the verb with a volitional meaning, yet in a context in which fulfilling the wish is inevitable for the addressee (all examples are from legal texts such as wills, ordinances, or decrees). A somewhat more doubtful case is the future meaning in EMD listed by Pijnenburg et al. eds. 2000 (which they call "infrequent"). Here, too, most dictionary examples can be read volitionally, but in just a few instances a temporal reading is more obvious than a volitional one. (i) is one of the very few illustrations (adapted from Pijnenburg et al. eds. 2000, entry "willen" in the online edition).(i)*Alsoe wat si daer af segghen* **willen** *ende ordineren, dat sal ic houden ende doen met ghoeden paise.*thus what they there of say want and order that shall I maintain and do with good peace"So what they want to/will say and order about it, that I will obey and do in good spirit."So maybe there has been a minor tendency in this verb in Middle Dutch to develop a temporal meaning.

meaning in these other modals, but only as a minor one. Although it is arguably related to directivity (see Nuyts 2008), this meaning is not central to the system of the modal and related meanings.

In sum, *zullen* and *willen* have a semantic profile and development very different from that of *kunnen*, *mogen*, *moeten* and *hoeven*. Hence, also semantically, *zullen* and *willen* are not part of the system constituted by the other four modal verbs. Maybe the reason why they did not join the latter is that their dominant or exclusive meaning (future tense marking and volition), present from OD/END onwards, is too remote from the classical range of modal and related meanings, and/or too "unnatural" as a source for developing these meanings. (Volition may emerge out of, but is an unlikely source for a dynamic, deontic or epistemic meaning. Time is an unlikely source for a dynamic or deontic meaning. See Byloo & Nuyts 2014.)

6 Conclusion

Dutch *kunnen*, *mogen*, *moeten* and *hoeven* show clear signs of "group behavior", both in the grammatical domain (cf. Section 4) and in the semantic domain (cf. Section 5), hence there is every reason to consider them a paradigm. This conclusion is further underscored by the fact that *zullen* and *willen*, even though they are grammatically and semantically somewhat related (and therefore traditionally considered part of the system of the modals in Dutch), do not participate in the dynamics shared by *kunnen*, *mogen*, *moeten* and *hoeven*. The latter four verbs constitute a significant cluster in the linguistic behavior of speakers of Dutch, hence we cannot but conclude that they play a distinctive role in the cognitive grammar coded in the brains of those speakers.

As such, this set of four modal verbs also offers an illustration of the different issues raised in Section 2 regarding what may count as a paradigm.

First of all, the set illustrates the gradualness of the notion as defined by the three diagnostic criteria mentioned in Section 2 The four verbs clearly satisfy the criterion of increasing convergence. Over the past 1000 years, they have gradually grown closer together, at an increasing speed, both semantically and grammatically, showing more and more signs of system bound dynamics, such as analogy effects, or avoidance of synonymy or functional overlap within the system. This process has gained momentum in the last 200 years, causing the helter-skelter grammatical and semantic evolutions observed in *hoeven*, as well as the rapidly evolving, and linguistically exceptional, re-autonomization process in all four verbs.

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The fact that there are mechanisms of avoidance of synonymy and functional overlap at work also signals that there is at least to some extent a strive for a division of labor among the members of the set (cf. the second diagnostic criterion). As indicated in Section 5, the result in the present day language is that there are two strong verbs (*moeten* and *hoeven*) and two weak verbs (*mogen* and *kunnen*). The two strong verbs differ in terms of their relation with negation,[15] the two weak verbs in terms of which modal or related meanings are most prominent in their semantic profile (cf. Section 5). The internal organization in this paradigm is not fully systematic (the division of labor is along different criteria between the weak and between the strong modals) nor very strict (*hoeven* is a pure negative polarity item but *moeten* does not entirely exclude negation; and *kunnen* and *mogen* share some meanings). As such the organization is probably weaker than, for instance, in an inflectional paradigm such as a case marking system in which (in the "perfect" situation) all participating forms are more or less complementary and together cover the entire functional "territory" (i.e. coding all semantically and/or syntactically relevant roles of participants in a state of affairs). Nevertheless, the four Dutch modals are relatively complementary in expressing aspects of the shared range of modal and related meanings, witness the fact that there are relatively very few usage contexts in which two of the forms would be mutually exchangeable without altering the meaning or communicative effect of an utterance.

Also the third diagnostic criterion, distinctiveness in the overall linguistic system, is satisfied to some extent. Again, the set of four forms is less unique in the system of Dutch than, for instance, an inflectional paradigm such as the case marking system in Latin, for which there are no alternatives at all in that language. Structurally, there are many other auxiliary forms in Dutch beyond the modals. And semantically or functionally, there are many other (sets of) forms for expressing modal and related meanings in the language, including adverbs and adjectives, and full verbs (e.g. some mental state predicates). Yet none of the latter types of expressive devices covers the same range of meanings as the four modal auxiliaries (modal adverbs and adjectives, for instance, typically focus on one modal category, most often epistemic modality or inferentiality; the same applies for the mental state verbs). Moreover, the modals are the only set of forms covering this semantic domain within the range of grammatical devices in the

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[15]This is true at least in the standard language and in the Northern Dutch dialects. Interestingly, in the Southern Dutch dialects *moeten* does not show a preference for positive contexts, but *hoeven* barely exists in these language varieties hence there is not really a competitor for *moeten* in them (see Diepeveen et al. 2006).

language (assuming that adverbs are not grammatical forms, a view that is not generally shared).

The gradualness of the notion of a paradigm, and of the three diagnostic criteria for it, is also manifest if one considers the diachronic evolution of the set of four modals in Dutch: it has taken a long time for this system to emerge, and determining a cut-off point on the historical cline for calling it a paradigm is arbitrary.

Secondly, the set of four modals in Dutch also illustrates that not only inflectional systems deserve to be called paradigms. As suggested above, it is beyond doubt that inflectional systems (obligatory or non-obligatory ones) more readily qualify for paradigmhood than systems of forms from other parts of speech. (Not all inflectional systems are necessarily "perfect" paradigms, though. For instance, in many languages, systems of verbal affixes for marking categories such as tense, aspect, mood, modality, or evidentiality, even obligatory ones, are not the unique markers for these meanings, and/or are not better organized internally than non-inflectional systems.) Still, in our present case we are dealing with a system of non-inflectional grammatical markers, and not even very strongly grammaticalized ones (the Dutch modals are much less grammaticalized than their English counterparts, for instance).[16] Moreover, in view of the re-autonomization trend and the strong increase in main verbal uses of these forms in Dutch, the status of the system as a grammatical one would seem to be weakened.

Thirdly and finally, the latter point also illustrates the last issue regarding paradigmhood raised in Section 2: the link with grammaticalization. Although, as indicated, more grammaticalized systems no doubt stand a better chance to qualify for paradigmhood than less grammaticalized ones, the set of four Dutch modals shows that grammaticalization is not a necessary correlate of paradigmhood. The process of re-autonomization in the four forms, which substantially increases their mutual tie, hence strengthens their status as a paradigm, is even, arguably, an instance of degrammaticalization (see Nuyts 2013, Nuyts & Caers 2021), hence an evolution in the opposite direction.

Acknowledgements

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[16]For instance, unlike the English modals, the Dutch modals still have productive infinitive and past tense forms, and they are still inflected for person and number.

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Chapter 9

Grammaticalisation, schematisation and paradigmaticisation: How they intersect in the development of German degree modifiers

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Grammaticalisation research has identified the tight integration of structures into paradigms as the final state of many grammaticalisation processes. Construction grammar approaches are particularly suitable for modelling such cases of paradigmaticisation since they invite researchers to study constructions not in isolation but in a wider network context. Drawing on this theoretical perspective, this paper investigates the grammaticalisation of a whole family of constructions. Based on synchronic and diachronic corpus studies, it presents quantitative analyses on the interrelated German constructions [*ein wenig* X] ('a little'), [*ein bissche*n X] ('a bit'), [*ein Quäntchen* X] (lit. 'a quantum'), [*ein Tick* X] (lit. 'a tick') and [eine Idee X] (lit. 'an idea'). In particular, we investigate their gradual context expansion from more referential ("lexical") uses to more procedural ("grammatical") quantifier and degree-modifier uses. We discuss to what extent this process can be understood in terms of paradigm formation. Our observations lead us to the conclusion that the process of paradigmaticisation involves emergent paradigms of multiple orders in the sense of constructions at different levels of schematicity. We argue that change is guided mainly by associations to micro-constructions and lower-level meso-constructions (e.g. Traugott 2007) . Only in advanced stages of grammaticalisation, when micro-constructions become sufficiently homogeneous, do higher-level meso-constructions and macro-constructions – i.e. paradigms in the traditional understanding of the term – act as decisive organisational forces.

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1 Introduction

In constructionist approaches to language, the question of how the internal structure of the construct-i-con can be modelled has recently come to the centre of attention (see e.g. Diessel 2019; Sommerer & Smirnova 2020). The inventory of inheritance relations proposed by Goldberg (1995) has been complemented by various suggestions that put a particular emphasis on horizontal links, called "lateral links" by Norde & Morris (2018) or "sister" links by Audring (2019). Links between constructions at the same level of abstraction are particularly interesting from a usage-based point of view in that they can account for phenomena like constructional alternations (Perek 2015) as well as phenomena of language variation and change such as constructional contamination (Pijpops & Van de Velde 2016; Pijpops et al. 2018).

The conceptualisation of linguistic knowledge as a fine-grained taxonomic network of constructions leads us to the classic concept of paradigmatic, or, as de Saussure (1916) calls them, associative relations between linguistic units. As Boden (2005: 174) puts it, "[p]aradigmatic relations oppose a unit to others that could replace it in a given sequence". In diachronic research, grammaticalisation theory has identified the tight integration of structures into paradigms as a target of grammaticalisation processes. For example, Lehmann (2015) posits paradigmaticity as one of his well-known grammaticalisation parameters and paradigmatic integration, or paradigmaticisation, as one of the key processes involved in grammaticalisation. In this process, "grammaticalized elements join preexistent paradigms and assimilate to their other members" (Lehmann 2015: 144).

Overall, it is traditional wisdom that paradigmatic relations are essential to language structure in general, and that paradigms in the more specific sense of indexical, closed units of organisation are central to grammatical structure, most notably in categories such as tense, aspect or case. In usage-based construction grammar, paradigmatic associations are central as well, since they are tightly integrated into the taxonomic architecture of the construct-i-con. However, some usage-based findings also call into question the importance of paradigms as highly abstract generalisations, suggesting that language users rely on more local generalisations and lower-level schemas (e.g. Boas 2003; Dąbrowska 2008; Perek 2015: Ch. 5; Schmid 2020). Thus, the status of paradigms in usage-based construction grammar is ambivalent. The present paper therefore explores the question of how relevant paradigms are to grammatical structure from a cognitive-functional usage-based perspective. Theoretically, a range of answers to this question is conceivable, with opposing views such as the following: paradigms are merely

an epiphenomenon of other motivations and mechanisms shaping grammar; or they are essential organisational forces, and thus cognitive entities, themselves. The present study approaches this issue from the perspective of language change. It investigates to what extent paradigmatic forces are reflected in the diachronic development of a family of grammaticalising constructions. In particular, the selected test case is quantifier/degree-modifier constructions in German. This constructional family forms a layered domain of grammar (cf. Hopper 1991), with older members such as [*ein bisschen* X] ('a bit (of) X') and [*ein wenig* X] ('a little X') and less grammaticalised members such as [*ein Quäntchen* X] (lit. 'a quantum-DIM (of) X') and [*eine Idee* X] (lit. 'an idea (of) X'). Through quantitative and qualitative corpus analyses, this study examines to what extent the grammaticalisation trajectories of each individual construction constitute independent changes or an interconnected process of paradigmaticisation influenced by network links as well as by overarching mid-level or high-level schemas. Despite some constructional individuality, the case study finds empirical evidence suggesting a scenario in which older constructions serve as attractor sets promoting the analogical recruitment of new members to an increasingly strengthened schema they collectively instantiate (cf., e.g., Amit 1989; Traugott 2008b; Verveckken 2015; Aaron 2016; De Smet & Fischer 2017). The organisational units contributing to this trend of convergence between multiple constructions appear to be partially schematic constructions at the mid-levels of abstraction. We reason that such a scenario is characteristic of early paradigmaticisation in the grammaticalisation of periphrastic constructions, and that high-level schemas – which come closest to the traditional idea of paradigms – exert an influence mainly in advanced stages of grammaticalisation and paradigmaticisation as typical of inflectional morphology.

The remainder of this paper is structured as follows. In Section 2, we discuss the theoretical background, focusing on the status of paradigms in (diachronic) usage-based construction grammar. In Section 3, we present our case study and discuss its results against this theoretical background. Section 4 provides a more general discussion of the process of paradigmaticisation from the perspective of the constructionist concept of schematisation. Finally, Section 5 offers a brief conclusion.

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2 Background: Paradigms and usage-based construction grammar

The structuralist notion of *paradigmatic* comes in broader and in more narrow senses, and not all of them have a close equivalent in the theoretical apparatus of usage-based construction grammar. In a broad sense, *paradigmatic* denotes a relation of choice between linguistic items that are associated with each other based on functional (e.g. synonymy) or formal (e.g. homonymy) features. As mentioned in Section 1, paradigmatic relations in this sense translate into links in constructional networks, such as subpart links and metaphorical extension links (e.g. Goldberg 1995) that connect constructions at the same level of schematicity (e.g. *arm* and *leg*; ditransitive construction and *for*-benefactive construction). In a narrow sense, paradigmatic and paradigm can be understood as a set with a fixed number of mutually exclusive forms whose meanings are indexical in that they are largely determined by their relations within this closed-class set. Prototypical instances of this type of paradigm are found in grammatical domains such as tense, person, voice and case. Such grammatical paradigms clearly differ from loose sets of open-class items such as lexemes being paradigmatically related via various sense relations. Construction grammar downplays this difference in tightness and closedness since it represents lexical items and grammatical items in a uniform format within a lexicon–grammar continuum (cf. Diewald 2020). In response to this problem, several construction grammarians have recently proposed theoretical add-ons: consider Booij's (e.g. 2015) concept of second order schemas, Audring's (e.g. 2019) sister schemas and Diewald's (2020) hyper-constructions. Advances in constructionist theorising are needed to model paradigms more comprehensively.

A classification that is very much in line with such network models is found in Traugott's (e.g. 2007) notion of constructional levels in terms of micro-, meso- and macro-constructions. Using the example of English future constructions (cf. Trousdale & Norde 2013: 36), Figure 1 visualises the basic idea behind these constructional levels. Micro-constructions, i.e. individual (largely) substantive construction types, can be subsumed under a single highly abstract schema, the macro-construction, if they share the same basic function. In Figure 1, the five formally diverse micro-constructions at the bottom can be taken to be weakly linked at a high level of abstraction, the macro-construction, based on their shared basic function of marking futurity. In-between, meso-constructions, i.e. mid-level schemas, unite subsets of similarly-behaving micro-constructions with a shared structure. Of the five micro-constructions used for illustration, [*will* V] and [*shall* V] are structurally alike (e.g. V as bare infinitive) and so are [ʙᴇ *going to* V] and
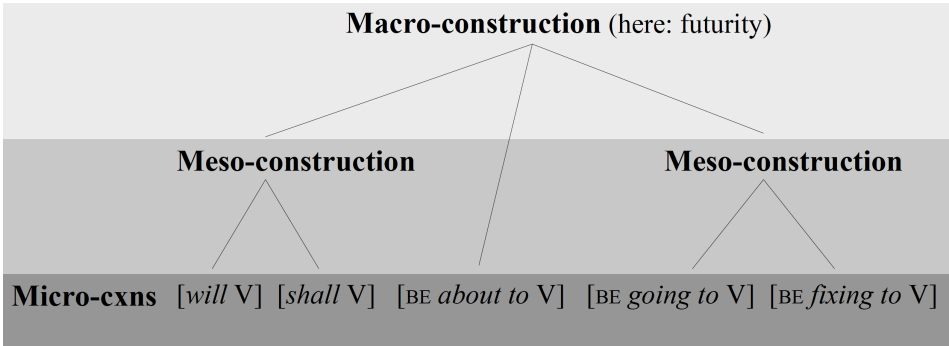
Figure 1: A network model of constructions, exemplified with future constructions.

non-standard [BE *fixing to* V] (e.g. progressive). Unlike [BE *about to* V], each of these two pairs of micro-constructions can therefore be subsumed under one meso-construction each. The higher the number of micro-constructions that collectively constitute one meso-construction, the more entrenched and productive this meso-construction tends to become. Meso-constructions are hypothesised to influence neighbouring constructions in the network through the domain-general cognitive process of analogy. Diachronically, constructional clusters headed by well-entrenched meso-constructions may attract other/novel micro-constructions, leading to the growth of a family of constructions. As detailed in the corpus study further below, Traugott's constructional levels thus qualify as a valuable descriptive tool for studying the reorganisation of the construct-i-con.

However, it has been a point of debate whether all of these constructional levels are psychologically plausible. Usage-based linguists have questioned whether patterns at the highest levels of abstraction/schematicity (e.g. fully schematic argument structure constructions) are represented in the minds of most speakers. Possibly, high-level generalisations are no more than linguists' constructs emerging from the analysis of aggregated usage data. As hinted at by some psycholinguistic and corpus-linguistic evidence (e.g. Boas 2003; Dąbrowska 2008; Dąbrowska 2015; Perek 2015: Ch. 5; Schmid & Mantlik 2015), the actual generalisations of individual speakers may stop at the mid-level of partially schematic constructions. In other words, mid- and low-level constructions appear to be the key material of linguistic knowledge thanks to their greater cognitive accessibility (i.e. entrenchment). From this perspective, high-level schemas, including paradigms, seem to be of relatively little psycholinguistic importance.

Yet, other findings from psycholinguistically minded grammaticalisation research indirectly stress the importance of paradigms. As argued most convinc-

ingly in a recent paper by Lehmann (2017), grammaticalisation is essentially a linguistic instance of cognitive automation, i.e. the domain-general process that turns more controlled, intentional activity into efficient, unconscious, rigid behaviour (cf. Schneider & Shiffrin 1977; Logan 1988; Givón 1989: Ch. 7; Moors & Houwer 2006). Automation streamlines the execution of recurrent tasks; and grammaticalisation does exactly that in language: it creates efficient solutions for frequently recurring communicative tasks, such as signalling futurity, plurality, possession or negation. Paradigms are an expected outcome of automation in language since they are rigid closed-class structures that can be executed with minimal attention. They allow speakers to maximise the processing capacities available for more complex, discursively primary communicative tasks (cf. Harder & Boye 2011). Humans' efficiency-driven capacity for automation thus seems to be a key factor underlying the trend that grammaticalisation processes are directed towards paradigms as a target state. From this perspective, paradigm formation is essential to language processing.

In short, *paradigm* and *paradigmaticisation* can be translated into usage-based constructionist concepts as follows. The synchronic notion of paradigms roughly corresponds to higher-level schemas and the "horizontal" associations between the constructions sanctioned by these schemas. It must be noted, however, that there is currently no single conventional solution in construction grammar regarding the exact types of schemas and links that fully capture grammatical paradigms in the narrow sense (see Smirnova & Sommerer 2020 for a problem-oriented discussion of different conceptions of nodes and vertical as well as horizontal links in constructional networks). The diachronic process of paradigmatisation is then a process of schema formation, i.e. schematisation, and of the gradual convergence of subordinate constructions into an increasingly tight set (cf. Diewald & Smirnova 2012). Two basic cognitive mechanisms of paradigmaticisation appear to be analogy and automation; a basic motivation is processing efficiency.

Based on the theoretical considerations presented above, we derive the following working hypotheses for the present case study on paradigmaticisation:

(i) Paradigmaticisation involves emergent paradigms of multiple orders in the sense of constructions at multiple levels of schematicity.

(ii) micro-constructions united by a meso-construction are likely to converge formally and/or functionally over time, thus producing more homogeneous paradigms.

(iii) New micro-constructions will be attracted to an emergent paradigm via analogy, especially when extant micro-constructions and their overarching schema(s) are strongly entrenched, with determinants of entrenchment being, among others, usage frequency and coherence of schema members.

In the case study presented below, our goal is to link these theoretical assumptions with observations based on the diachronic development and synchronic behaviour of one particular family of constructions. On a terminological note, we employ the term *constructional family* as an exploratory notion: unlike *paradigm* and constructional levels like *meso-construction*, which are meant to capture mental associations and representations, *constructional family* more loosely refers to a group of linguistic expressions with functional and/or formal commonalities at a pre-theoretical level.

3 Case study: The development of German quantifier/degree-modifier constructions

Parts of the present investigation draw on findings from a previous case study (Neels & Hartmann 2018) focussing on the diachrony of the frequent German degree modifiers [*ein wenig* X] (' a little X') and [*ein bisschen* X] ('a bit (of) X'). In that study, we extended our account of the diachronic development also to other structurally similar quantifier/degree-modifier constructions with low usage frequencies, but we did not provide systematic corpus data on these less established modifiers. The present follow-up study adds these data, providing quantitative corpus analyses on three more members of the constructional family: [*ein Quäntchen* X] (lit. 'a quantum (of) X'), [*ein Tick* X] (lit. 'a tick (of) X') and [*eine Idee* X] (lit. 'an idea (of) X'). Section 3.1 first introduces the data and methods used in this investigation. In Section 3.2, we sketch out three possible grammaticalisation scenarios leading to degree-modifier functions, before moving on to the results. Section 3.3 reviews the main results on *ein wenig* and *ein bisschen*. Section 3.4 details our results on the less grammaticalised expressions *ein Quäntchen*, *ein Tick* and *eine Idee*, and provides a synthesis of our earlier findings and the present analyses.

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3.1 Data and methods

Five members of the expanding family of German quantifier/degree-modifier constructions are under scrutiny in the present investigation.[1] These five micro-constructions are exemplified in (1) to (5) below.

(1)   a.   *Warte doch, du mußt **ein bißchen** Eigenlob hören.*
           'Wait, you have to hear **a bit** of self-praise.'
           (1896, DeReKo-HIST)

      b.   *Ich tränke gern ein Glas, die Freiheit hoch zu ehren, Wenn eure Weine nur **ein Bißchen** besser wären.*
           'I'd love to drink a glass, in freedom's honour, if only the wine were **a bit** better.'
           (1790, DTA)

      c.   Rück doch mal **'n bischen** den Tisch!
           'Move the table **a bit**!'
           (1890, DTA)

(2)   *aber seine Aussprache war **ein wenig** bäuerisch, und sein Auge blickte nicht fein*
      'but his pronunciation was **a little** rural, and his eye didn't look fine'
      (1805, DeReKo-HIST: Jean Paul)

(3)   *Doch er hat auch **ein Quäntchen** Humor im Hinterkopf*
      'But he also has **a bit** (lit.: **quantum**) of humour in the back of his mind'
      (2009, DeReKo-Tagged-C)

(4)   *Da waren die Gäste aus Wien **einen Tick** effektiver.*
      'The guests from Vienna were **a bit** (lit.: **tick**) more effective.'
      (2008, DeReKo-Tagged-C)

(5)   *ihre Darstellung ist **eine Idee** zu ernst.*
      'her portrayal is **a bit** (lit.: **idea**) too serious'
      (1999, DeReKo- Tagged-C)

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[1]Cross-linguistically, structurally similar constructions include English *a bit* (*of*), *a shred of* and *a bunch of* (e.g. Brems 2007; Traugott 2008b; Shao et al. 2019), Spanish *un montón de* 'a heap of' and *un hatajo de* 'a herd of' (e.g. Verveckken 2015), and Dutch *massa('s)* 'mass(es)' (e.g. De Clerck & Colleman 2013) among others.

In present-day German, [*ein bisschen* X] ('a bit (of) X') can be considered the "ideal" representative of the constructional family, being highly frequent and productive and exhibiting all prototypical features. Typical family members are made up of (i) the indefinite article *ein*, (ii) a noun denoting a small unit, and (iii) an open slot that can be filled by items from various word classes. Different word classes hosted in the constructions are associated with different constructional functions. Partitive and quantifier uses are associated with noun modification, typically with concrete nouns and mass nouns (cf. Examples 1a, 3), respectively. Constructs modifying adjectives (1b, 2, 4, 5), verbs (1c) or other parts of speech generally fulfil degree-modifier functions. As detailed further below, individual members of this family of quantifier/degree-modifier constructions differ in their constraints and preferences regarding the syntactic categories sanctioned in their productive slot.

Usage data reflecting the diachronic trajectories and potential mutual influences of the five micro-constructions were extracted from several historical and contemporary German corpora. In particular, we draw on the *Deutsches Textarchiv* (DTA; German Text Archive; Geyken & Gloning 2015) for historical data on all five constructions; we collected additional diachronic data on [*ein bisschen* X] and [*ein wenig* X] ('a little X') from the historical component of the *Deutsches Referenzkorpus* (DeReKo-HIST; German Reference Corpus; Kupietz & Keibel 2009); and we searched a tagged synchronic component of that corpus, DeReKo-Tagged-C, for present-day uses of the low-frequency constructions [*ein Quäntchen* X] (lit. 'a quantum (of) X'), [*ein Tick* X] (lit. 'a tick (of) X') and [*eine Idee* X] (lit. 'an idea (of) X'). For extracting these three younger constructions, we used the following queries:

```
REG(^Idee$|^Tick$|^Quäntchen$) /+w1 MORPH(A)
REG(^Tick$|^Quäntchen$) /+w1 MORPH(N)
REG(^Idee$|^Tick$|^Quäntchen$) /+w1 MORPH(ADV)
```

False hits as well as duplicates were manually removed, and the remaining data were coded for the part of speech of the modified element. In total, we found 44 instances of *eine Idee*, 1,777 of *ein Tick*, and 1,694 of *ein Quäntchen* in the DeReKo-Tagged-C data. Historical data of these three constructions are fairly rare, as described in Section 3.4 further below. For (*ein*) *bisschen* and *ein wenig*, we found 3,226 and 15,783 historical tokens, respectively, in DTA and DeReKo-HIST (see Neels & Hartmann (2018) for details).

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3.2 Diachronic paths leading to degree-modifier functions

Despite the structural similarity of the German degree modifiers, their individual origins and developmental paths seem to be fairly diverse. We consider three possible grammaticalisation scenarios giving rise to such micro-constructions. The plausibility of each scenario for the German constructions at hand will be discussed in the subsequent sections in the light of our corpus data.

In the first scenario, a lexical source construction grammaticalises "under its own steam" along a cross-linguistically attested grammaticalisation path. This scenario theoretically entails a highly gradual development with discernable chronological stages and with little to no analogical influence by extant grammatical constructions. It roughly corresponds to what Lehmann (2004, 2015) calls "pure" grammaticalisation or "innovation", contrasting with his notions of "analogically-oriented" grammaticalisation and "renovation". According to Lehmann (e.g. 2004: 161), only the former type, i.e. pure grammaticalisation, may give rise to a genuinely new grammatical category (but cf. De Smet 2014: Section 4.1). In such cases of category emergence, meso-constructions can be expected to play no significant role. In the case and time frame we investigate, they potentially do since categories like quantifier and degree modifier are in place and instantiated by multiple expressions of German. Under these conditions, applying the theoretical concept of pure grammaticalisation is not expedient. We therefore define the first scenario by a feature that is empirically more accessible, namely the incremental progression of grammaticalisation along a cline. In line with previous research on the diachrony of similar degree modifiers in English (esp. Traugott 2008a,b), the grammaticalisation path applying to the German constructions is likely to be as follows: pre-partitive > partitive > quantifier > degree modifier (e.g. *the bite of an apple > bits of bread > a bit of work > a bit tired*).

In the second scenario, the micro-construction starts as a fixed idiomatic expression but expands and develops a productive slot. For example, it is conceivable that the degree modifier [*ein Tick* X] started out as a fairly fixed expression combining with a particular temporal adjective, as in *einen Tick schneller* 'a tick/bit faster' or *einen Tick zu spät* 'a tick/bit too late', which are conventional collocations and in which the noun *Tick* 'tick (of a clock)' retains a concrete time-related meaning. Possibly, the expression has been gradually increasing its productivity through item-based expansion from one temporal adjective to others, to non-temporal adjectives and eventually to other word classes. This scenario differs from the first one in that it does not presuppose earlier stages with partitive and quantifier uses.

In the third hypothesised scenario, analogically driven grammaticalisation, a

micro-construction directly joins an existing degree-modifier meso-construction, with firmly entrenched schema members serving as role models. As introduced in Section 2, it is this scenario that demonstrates the organisational force of paradigms-as-schemas most clearly. Whereas in the first scenario the process of paradigmatic integration is likely to become evident only relatively late in the grammaticalisation process (cf. stage IV in the model by Diewald & Smirnova 2012), paradigmatic integration is at the heart of the beginning of grammaticalisation scenarios that are chiefly determined by analogy.

Although the three scenarios are theoretically distinct, they are not entirely mutually exclusive. Mixed trajectories and influences are possible, and distinguishing the three scenarios on the basis of usage data is not straightforward. Still, there are some fairly reliable variables in usage that help disentangle the hypothesised scenarios. We focus on four parameters:

(i) the chronology of functional expansion leading up to degree-modifier uses;

(ii) patterns of behavioural convergence between constructions;

(iii) patterns of collocational range; and

(iv) diachronic token-frequency levels.

More than in the analogically driven grammaticalisation scenario or the scenario from fixed to productive expression, the isolated grammaticalisation of a micro-construction along a grammaticalisation path correlates with, and even depends on, increasingly high frequencies of use. The rationale behind this correlation is that high frequency – token frequency especially, but also co-occurrence and type frequency – appears to be a crucial causal force in independent/"pure" grammaticalisation, fuelling several underlying cognitive processes such as chunking, habituation, neuromotor automation and schema entrenchment (Bybee 2003; Krug 2003; Diessel & Hilpert 2016; Neels 2020). Thus, the scenario of independent grammaticalisation along a cline can be expected to differ from the other two scenarios with respect to diachronic token-frequency levels and, above all, with respect to the chronology of functional expansion. What makes the scenario of grammaticalisation by analogy empirically distinguishable from the scenario of a fixed expression turning productive is patterns of behavioural convergence between constructions and patterns of collocational range.

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3.3 *ein wenig* and *ein bisschen*

The quantifier/degree-modifier constructions *ein wenig* and *ein bisschen* can arguably be used largely interchangeably in present-day German, although the former variant – which is also the older one – may be seen as slightly more formal. *Ein wenig* in turn has largely ousted the yet older variant *ein lützel*, which used to be fairly frequent in the Middle High German period[2] but had fallen out of use in most German dialects by the 17th century (see Neels & Hartmann 2018: 143).

Ein bisschen undergoes a development that bears striking similarities to the evolution of English *a bit* as outlined by Traugott (Traugott 2007; 2008a,b). Like its English equivalent, *bisschen* derives from the (diminutivised version of the) noun *Bissen* 'bite', and just like English *a bit*, it tends to combine with concrete nouns as in (6) at first before it comes to modify abstract nouns to an ever larger extent (7), as Neels & Hartmann (2018) show, taking data from the mid-17th to the mid-20th century into account.

(6) *Der diebische Schösser wird mir nach meinem **bisschen** Brot trachten*
     'The thievisch tax collector will strive for my **bit** of bread'
     (1713, DeReKo-HIST: HK5)

(7) *So gilt **ein bißchen** Witz mehr als ein gutes Herz!*
     'So **a bit** of wit is considered to be more important than a good heart.'
     (1746, DeReKo-HIST: HK3)

While the construction tends to combine with nouns in the early stages of its development, the proportion of verbs modified by *ein bisschen* increases steadily (Neels & Hartmann 2018: 150), as in (8). A slight upward trend can also be seen for adjectives, as in (9), although the pattern is less clear here, especially due to data sparsity in the early time slices analysed.

(8) *Wollten Sie nicht **ein bisschen** ruhen?*
     'Did you not want to rest **a bit**?'
     (1776, DeReKo-HIST: HK3)

(9) *Wär ich doch so hold, wie jener Freund der Liebeskönigin! Oder nur **ein bißchen** schöner, Als ich Armer izo bin!*

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[2]We adopt the traditional periodisation of German language history: c. 750–1050 Old High German; 1050–1350 Middle High German; 1350–1650 Early New High German; 1650–today New High German.

'If I was as fair as that friend of the love queen! Or just **a bit** more beautiful, than I am, poor me, right now!'
(1778, DTA)

One striking result of our previous corpus study is that the distributional characteristics of *ein bisschen* seem to align over time with those of the older *ein wenig* construction, especially with regard to relative frequencies of nouns, verbs and adjectives modified by the two constructions. Furthermore, we observed a diachronic shift in the variability of determiners in [DET *bisschen* X] towards the increasingly fixed string *ein bisschen*. These changes rendered the *ein bisschen* construction structurally very similar to *ein wenig*, suggesting some analogical influence by the latter construction.

Other aspects of the diachrony of the *ein bisschen* construction, in contrast, are more indicative of a fairly independent grammaticalisation process. For one thing, the attested shift from concrete to abstract nouns and from noun modification to adjective and verb modification closely matches the steps on the cline from partitive to quantifier to degree modifier. That is, the historical usage data examined in Neels & Hartmann (2018) support the conclusion that *ein bisschen* passed through the stages of the grammaticalisation path in successive order. Another relevant piece of evidence is the long-term token-frequency profile of *ein bisschen*. As plotted in Figure 2, the grammaticalisation of the *ein bisschen* construction is accompanied by a pronounced increase in absolute token frequency.[3] The written records are, however, likely to depict this increase with a considerable temporal delay owing to the fact that, until the mid-19th century at least, *ein bisschen* was evaluated as colloquial (see Tiefenbach 1987: 6).

Thus, for *ein bisschen*, our usage-based parameters tentatively suggest a fairly typical case of grammaticalisation whereby one particular micro-construction incrementally emancipated from its lexical source through frequency effects – however, possibly with additional support from extant constructions acting as analogical models. Interestingly, the picture emerging for the younger German quantifier/degree-modifier constructions examined next is notably different.

3.4 *ein Quäntchen, ein Tick, eine Idee*

The modifiers [*ein Quäntchen* X] (lit. 'a quantum (of) X'), [*ein Tick* X] (lit. 'a tick (of) X') and [*eine Idee* X] (lit. 'an idea (of) X') are clearly more constrained and

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[3]We use the DWDS corpora here to visualize the increase in frequency as it is much larger than the database we used for Neels & Hartmann (2018); however, the findings based on our own data, covering the time span from c. 1650 to 1900, are very much in line with what Figure 2 shows (see (Neels & Hartmann 2018: 148).

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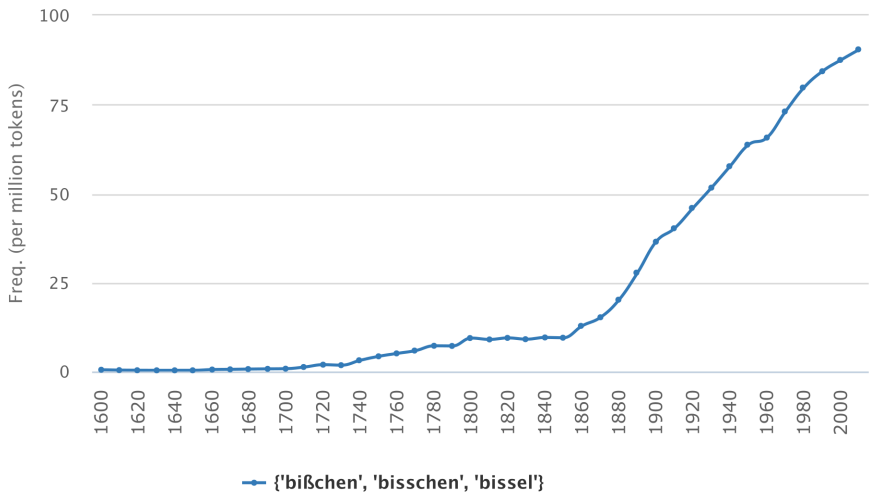
Figure 2: The normalised absolute token frequency of (ein) bisschen for the period from 1600 to the present; reproduced from the DWDS; based on aggregated data from the reference corpora and the newspaper corpora used by the DWDS (retrieved on 3 September 2020).

much less frequent in contemporary usage than the *ein bisschen* and *ein wenig* constructions. Table 1 provides a first overview of the usage patterns of *ein Quäntchen*, *ein Tick* and *eine Idee*. In the 1.5-billion-word corpus DeReKo-Tagged-C, none of the three constructions is attested much more frequently than about 1,500 times, which yields normalised token frequencies of merely about one occurrence per million words (cf. in Figure 2 above). The modifier [*eine Idee* X] is particularly infrequent, with 0.03 tokens per million words. degree-modifier uses of the three expressions do exist, but their developments constitute cases of low-frequency grammaticalisation, a phenomenon that is somewhat problematic for frequency-effect explanations in the Bybeean tradition (Hoffmann 2004; Brems 2007; Neels 2020).

Accordingly, only few historical tokens of the three younger quantifier/degree-modifier constructions can be found in the smaller DTA database. We extracted no more than 7 tokens of [*eine Idee* X] and no quantifier or degree-modifier uses of *ein Tick* at all. As for *ein Quäntchen*, the historical picture is slightly different. The expression originated as a commercial weight, *Quentchen*, i.e. the fourth or fifth part of one lot.[4] About 90% of the 158 DTA tokens attested between 1,756

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[4] Compare Latin *quintus* 'the fifth'.

Table 1: Overview of the corpus data for the three constructions.

	eine Idee	ein Tick	ein Quäntchen
adjective (positive)	-	11 (0.62%)	4 (0.24%)
adjective (comparative)	20 (45.5%)	1,280 (72.0%)	71 (4.19%)
adjective with *zu*	17 (38.6%)	312 (17.6%)	-
adverb	5 (11.4%)	54 (3.04%)	26 (1.53%)
noun	2 (4.5%)	59 (3.32%)	1,588 (93.7%)
preposition phrase	-	17 (0.96%)	-
verb	-	44 (2.48%)	5 (2.95%)
total	**44**	**1,777**	**1,694**

and 1,910 are clear instances of *Quäntchen/Quentchen* being used as a technical measure, as exemplified in (10); a few tokens are ambiguous, leaning towards more colloquial uses, as in (11).

(10)   *Die Kuhmilch enthält endlich an Ram zwanzig **Quentchen**, an fester Butter sechs **Quentchen**, an dichtem Käse drei Unzen, an eingedickter Wadikke zehn **Quentchens***
        'Cow's milk ultimately contains 20 **Quäntchen** of cream, 6 **Quäntchen** of solid butter, 3 ounces of thick cheese, 10 **Quäntchen** of concentrated whey'
        (1756, DTA: Haller)

(11)   *Ein **Quentchen** Mutterwitz ist besser, als ein Zentner Schulwitz.*
        'One **Quäntchen**/A **bit** of mother wit is better than one centner of school wit.'
        (1762, DTA: Rabener)

Through folk-etymological reanalysis, as the commercial weight of *Quentchen* became uncommon in the 20th century, the expression was interpreted as a diminutive form related to 'quantum'.[5] It survives as a lower-frequency quantifier and, to a certain extent, as degree modifier, as quantified below.

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[5]Note that the spelling was changed from *Quentchen* to *Quäntchen* in the German spelling reform in 1996. This is why most of the cited examples are spelled with an <e> instead of an <ä>.

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In addition to the total frequencies of *ein Quäntchen*, *ein Tick* and *eine Idee* in DeReKo-Tagged-C, Table 1 shows the distribution of parts of speech across the three constructions. This provides a first glimpse into their functional commonalities and relative differences in contemporary usage. Part of the information of Table 1 is condensed into Figure 3, which visualises the distribution of nouns, verbs and adjectives in the three constructions. Together, Table 1 and Figure 3 reveal that all three constructions exhibit clear preferences with regard to the parts of speech with which they combine. *Eine Idee* and *ein Tick* combine mainly with adjectives, more precisely with adjectives in the comparative or with the degree particle *zu* 'too'. *Ein Quäntchen*, on the other hand, shows a strong preference for nouns, while also combining with graded adjectives and other parts of speech from time to time. Thus, *ein Quäntchen* serves primarily as a quantifier whereas *ein Tick* and *eine Idee* are used mostly for degree-modifying purposes.

At a more fine-grained level of analysis, Table 2 lists the most frequent lexical items occurring in each of the constructions.[6] Two things become immediately clear in these lists of collocates. Firstly, there is a considerable amount of overlap between the lexical items that preferentially occur in the three constructions. For example, *mehr* is a top-three collexeme in each construction, including the *ein Quäntchen* construction despite the fact that this construction is dispreferred as a degree modifier. Secondly, their use seems to be largely constrained to a relatively small set of lexemes, which sets them apart from the *ein bisschen* and *ein wenig* constructions discussed above.

Some collocations are particularly idiomatic and dominant in current usage. Most notably, combinations with the noun *Glück* 'luck' make up about 80% of all *ein Quäntchen* tokens found in DeReKo-Tagged-C, and *Glück* is more than 25 times more frequent than the second-ranked collexeme. Also note that, in line with the prototypical phrase *ein Quäntchen Glück*, the other top collexemes of *ein Quäntchen* listed in Table 3 are nouns that have positive connotations as well. This specific collocational pattern is not to be expected solely on the basis of the construction's past as a commercial weight. Based on this origin, one might expect an early grammaticalisation trajectory that involves high relative frequencies of (mass) nouns in general, but not necessarily the dominance of one particular noun. However, it seems that, to a large extent, the construction owes its present-day existence as a low- to mid-productive quantifier to the strongly entrenched collocation *ein Quäntchen Glück*. Conceivably, the low-frequency [*ein Quäntchen* X] construction also receives some analogical support through the

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[6]Hapax legomena are not taken into account here, which is why there are fewer items for *eine Idee* than for the other two constructions.
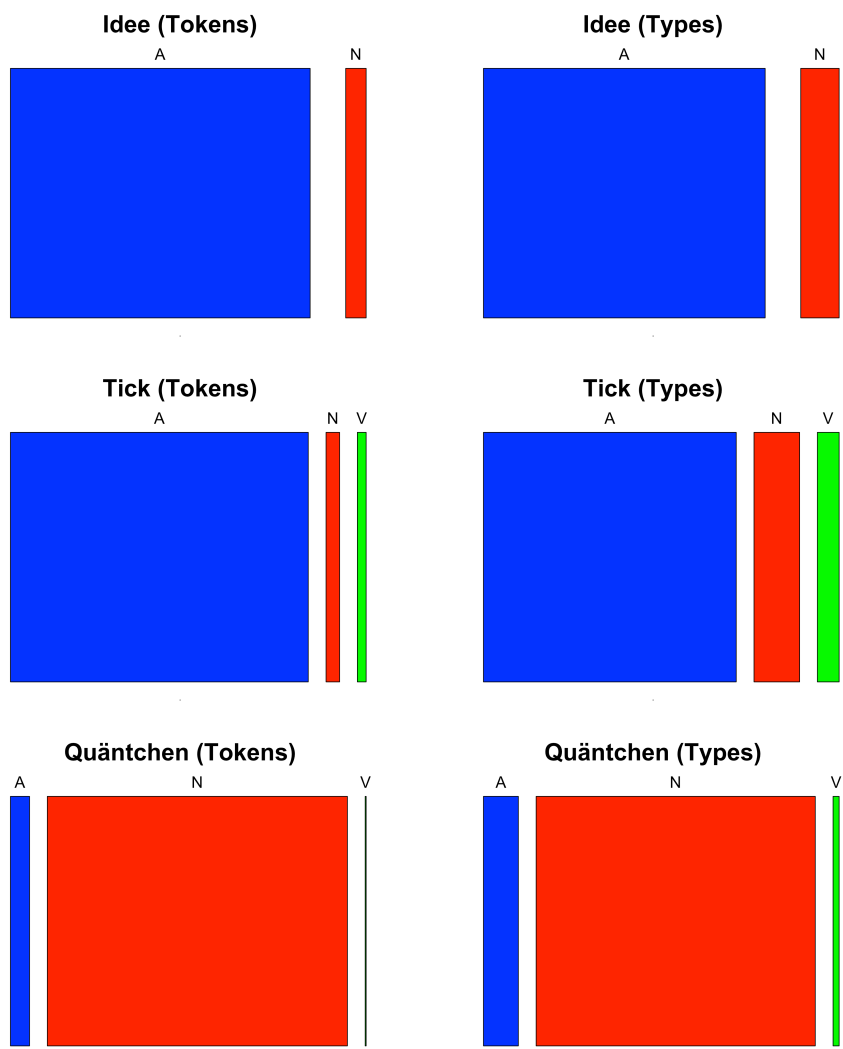
Figure 3: Distribution of nouns, adjectives, and verbs in the three constructions.

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Table 2: Top 20 modified items for each construction (without hapax legomena).

eine Idee		ein Tick		ein Quäntchen	
Lemma	**Freq**	**Lemma**	**Freq**	**Lemma**	**Freq**
gut 'good'	393	gut 'good'	8	Glück 'luck'	1,303
schnell 'fast'	174	schnell 'fast'	4	viel 'much'	51
viel 'much'	111	viel 'much'	4	gut 'good'	21
stark 'strong'	102	schnell 'fast'	3	Humor 'humour'	13
spät 'late'	91	voraus 'ahead'	3	Trost 'solace'	12
aggressiv 'aggressive'	60	hoch 'high'	2	Wahrheit 'truth'	7
clever	36	lang 'long'	2	Energie 'energy'	6
voraus 'ahead'	29	Algenfood 'seaweed food'	1	Fortune 'luck'	5
viel 'much'	25	bunter 'more colorful'	1	Ironie 'irony'	5
warm 'warm'	18	darunter 'below'	1	Kraft 'strength'	5
hoch 'high'	17	eitel 'vein'	1	Mut 'courage'	5
offensiv 'offensive'	15	ernst 'serious'	1	Konzentration 'concentration'	4
eher 'earlier'	14	flach 'flat'	1	Stolz 'pride'	4
lang 'long'	13	gleich 'equal'	1	Begeisterung 'enthusiasm'	3
schlecht 'bad'	13	herzig 'cute'	1	davon 'thereof'	3
stark 'strong'	12	Jazz	1	Disziplin 'discipline'	3
vor 'before'	12	klangverliebt 'sound-loving'	1	Entschlossenheit 'determination'	3
langsam 'slow'	11	kurz 'short'	1	Leistung 'performance'	3
weit 'far/broad'	11	leise 'quiet/silent'	1	Präzision 'precision'	3
früh 'early'	10	schwach 'weak'	1	Qualität 'quality'	3

firmly established *ein bisschen* construction, with which *ein Quäntchen* shares associative links thanks to similarities such as the diminutive suffix *-chen*. Overall, however, the most informative parameter for the diachrony of *ein Quäntchen* appears to be the parameter of collocational range. It strongly points to the second grammaticalisation scenario introduced in Section 3.2, i.e. a process whereby a fixed idiomatic expression develops an open slot with a certain degree of productivity.

Contemporary corpus data demonstrates that the *ein Quäntchen* construction is barely entering more advanced stages of grammaticalisation in which it expands from quantifier (95%) to degree-modifier uses (5%), whereas *ein Tick* and *eine Idee* are first and foremost degree modifiers and only rarely used as quantifiers. Their usage profiles thus yield the somewhat strange picture that *ein Tick* and *eine Idee*, as it were, skipped the presumably less grammaticalised quantifier stage on the grammaticalisation path presented in Section 3.2 (pre-partitive > partitive > quantifier > degree modifier). Interestingly, De Clerck & Brems (2016), studying similar English constructions with size nouns (e.g. *mass*(*es*), *heap*(*s*), *bunch*), also observe trajectories with unattested (supposedly) intermediate grammaticalisation stages. The parameter we labelled "chronology of functional expansion" suggests that the degree modifiers *ein Tick* and *eine Idee* have not evol-

ved through independent grammaticalisation processes. Given the remarkably low absolute token frequencies of the two constructions, also the frequency parameter speaks against the scenario of independent grammaticalisation. Moreoever, unlike in the case of *ein Quäntchen*, our analysis on collocational range has not revealed any highly dominant collexemes for [*ein Tick* X] or [*eine Idee* X]. This makes the grammaticalisation scenario from fixed to productive expression seem less likely for these two constructions. Both constructions, we argue below, owe their existence or emergence largely to pre-existing templates in the modern German network of quantifier/degree-modifier constructions.

Diachronic corpus data suggest that *ein Tick* and *eine Idee* gained some ground only around 1900. [*eine Idee* X] presumably emerged in the 19th century. The 7 tokens we extracted from the DTA stem from that time; one of them is reproduced in (12).

(12) *Ceara: Eine der Maranham sehr ähnliche Baumwolle, vielleicht sogar **eine Idee** besser.*
      'Ceará: a type of cotton very similar to Maranhão cotton, possibly even **a bit** (lit.: **idea**) better.
      (1889, DTA: Justi)

With not a single token in our DTA data, the modifier [*ein Tick* X] seems to be even younger than *eine Idee*.

The development of *eine Idee*, *ein Tick* or any other German quantifier/degree-modifier construction grammaticalising during the 20th century must be understood in the context of a variety of co-existing near-synonymous constructions. Not only are there the three other constructions analysed in the present study, i.e. *ein wenig*, *ein bisschen* and *ein Quäntchen*, but the constructional family comprises several more lower-frequency members, two of which are exemplified in (13) and (14).

(13) ***Eine Prise** Liberalismus wird dem Land guttun*
      '**a pinch** of liberalism will do the country good'
      (2012, DeReKo: Die Zeit)

(14) *Aber wenn die Bundesregierung ihren eigenen Bericht ernst nimmt und noch über **einen Funken** Anstand verfügt, muß sie Stahl jetzt wieder in sein Amt einsetzen.*
      'But if the Federal Government takes their own report seriously and still has **a spark** of decency, they must put Stahl back into his office.'
      (1993, DeReKo: Die Zeit)

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By the end of the 19th century at the very latest (but probably much earlier; recall the observations on the frequency profile and colloquial status of *ein biss-chen* in Section 3.3), constructional network constellations had developed that assist the grammaticalisation of novel quantifier/degree-modifier constructions. Multiple micro-constructions, above all the highly grammatiacalised *ein bisschen* and *ein wenig*, had entered into a paradigmatic relation. As discussed in Section 2, the coexistence of multiple formally and functionally similar expressions, some of which being highly frequent, assist the recognition and entrenchment of an overarching mid-level schema. In the present case, this schema or meso-construction features an emergent slot with the feature 'small/minor unit': [*ein* SMALL/MINOR-UNIT X]. Such a meso-construction, together with some frequent members, can be conceived of as an attractor set for the development of novel micro-constructions. According to this line of reasoning, *ein Tick* and *eine Idee* were attracted to the extant, increasingly strengthened quantifier/degree-modifier meso-construction in a scenario of analogically driven grammaticalisation. This account is empirically supported above all by the observation that the diachronic context expansion of *ein Tick* and *eine Idee* did not proceed along a multi-stage grammaticalisation path but rather resembles an instant recruitment as degree modifiers.

The notion of a German quantifier/degree-modifier meso-construction, however, needs some refinement to do justice to the usage profiles of its hypothesised members. This meso-construction should not be conceived of as a single homogeneous mid-level schema but rather as an assembly with multiple subschemas. For one thing, not all associated micro-constructions are equally productive as both quantifiers and degree modifiers. As shown in the corpus analysis above, degree-modifier uses of *ein Quäntchen* are uncommon, while quantifier uses have low relative frequencies in the usage profiles of *ein Tick* and *eine Idee*. What is more, even within one of the two functional domains, individual micro-constructions may pattern more locally. For instance, the degree-modifier constructs of *ein Tick* and *eine Idee* in the corpus have been found to combine overwhelmingly with graded adjectives. Such construction-specific differences make a unified account seem somewhat problematic. Clearly, each micro-construction has its own unique properties and history. However, it is important to stress that there are certain dominant micro-constructions that freely participate in most or all quantifier and degree-modifier subschemas. The degree-modifier subschema with graded adjectives, which is central to *ein Tick* and *eine Idee*, is also served by *ein bisschen* (15) and *ein wenig* (16) with a substantial (absolute and relative) token frequency.

(15)   ***Ein bißchen*** *amüsanter ist es hier doch.*
       'It is **a bit** more amusing here.'
       (1897, DeReKo-HIST: HK3)

(16)   *Der Diskurs dauert mir **ein wenig** zu lang.*
       'The discourse takes **a little** too long for my taste.'
       (1823, DeReKo-HIST: HK3)

Highly productive members such as *ein bisschen* and *ein wenig* can be expected to serve as prototypes of the constructional family. Other, less productive members with more specific constraints are associated with the prototype, and they are associated with each other through family resemblance (see Traugott 2008b: 33 for a similar account of English [N *of* NP] patterns).

There is not only a great formal similarity between the family members but also a considerable functional overlap regarding the quantifier and degree-modifier subschemas served by them. This hypothesised network constellation with interrelated quantifier and degree-modifier subschemas at the meso-level can be argued to promote the analogical recruitment of novel micro-constructions as well as the analogical realignment of existing ones, turning some quantifiers into degree modifiers and vice versa. Without the support of a quantifier/degree-modifier meso-construction and subschemas linking extant micro-constructions, the observed emergence of a variety of lower-frequency degree modifiers and quantifiers would be hard to account for.

4 Schematisation and paradigmaticisation in morphosyntax

The grammaticalisation of individual micro-constructions and constructional families involves schematisation in multiple ways. In micro-constructions, shifts towards grammatical functions translate into increasing schematicity not only at the level of constructional semantics but also at the level of the constructional slots as reflected by the types of collexmes entering these slots (cf. Perek 2020). In other words, the formerly more contentful, referential meaning of a grammaticalising micro-construction becomes more abstract and more schematic in this regard, and the slots can be understood as schematic categories constraining the host-class (Himmelmann 2004) of the construction. In the present case study, it has been illustrated that the slots of less grammaticalised quantifier/degree-modifier constructions are less schematic and more constrained. The [*ein Quäntchen*

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X] construction, for example, seems to be structured around one prototypical exemplar, *ein Quäntchen Glück*. The slot of the highly grammaticalised [*ein bisschen* X], in contrast, has hardly any semantic constraints and hosts virtually all parts of speech. Another dimension of schematisation is the formation and increasing entrenchment of higher-level schemas, which we refer to as meso-constructions (and macro-constructions) and which emerge as generalisations over multiple structurally similar micro-constructions. At high levels of abstraction, such as a potential macro-construction for German quantifiers and/or degree-modifiers, the micro-constructions studied here might be linked to formally dissimilar, but functionally related constructions such as the single-word modifiers *etwas* 'somewhat', *leicht* 'slightly', *sehr* 'very' and *viel* 'much'. However, there appears to be little empirical ground for the postulation of such a highly abstract link as a potential source of mutual influence in the development of such formally dissimilar micro-constructions. We see more reason to argue that change in the early grammaticalisation and paradigmaticisation of syntactic constructions is guided mainly by associations to micro-constructions and lower-level meso-constructions.

There are signs of analogical and thus paradigmatic forces, but this influence is limited in that the micro-constructions in our case study each have their unique diachronic trajectories and retain idiosyncratic properties. For instance, although the degree modifiers *ein Tick* and *eine Idee*, skipping the quantifier stage expected in a scenario of independent grammaticalisation, appear to have evolved through analogy, their use has been shown to be largely restricted to one specific subtype of degree modification, namely combinations with graded adjectives. Possibly, such construction-specific properties are effects of persistence (Hopper 1991) based on features of the original lexical source construction. They can, however, also be thought of as subschemas at the meso-level if there is a subset of two or more micro-constructions within the family that share a particular distribution. In our case study, this applies to *ein Tick* and *eine Idee*, and this also applies to *ein bisschen* and *ein wenig* to the extent that a considerable proportion of their uses match the hypothesised degree-modifier subschema for graded adjectives. From this perspective, the observation that some grammaticalising micro-constructions pattern more locally in usage than might be expected need not always result from micro-level persistence (or competition) but may be linked to meso-constructional subschemas (cf. Langacker 2000: 29). The lower the degree of schematicity, the more accessible a template tends to be – that is what a lot of usage-based research suggests (cf. Section 2). Accordingly, novel micro-constructions in analogically driven grammaticalisation are likely to be most strongly attracted to the lowest-level schemas entrenched at the meso-level.

Families of grammatical(ising) constructions form a layered (Hopper 1991) domain of grammar shaped by diverse, partly opposing forces. Older and younger micro-constructions both support and compete with each other (cf. Delorge et al. 2014; De Smet & Fischer 2017; De Smet et al. 2018) . In the present case study, we focus on the role of support, but the aspect of competition in the German quantifier/degree-modifier constructions is also evident, for example in the aforementioned disappearance of the old *ein lützel* construction accompanying the rise of *ein wenig*. Another possible outcome of competition is division of labour and thereby the specialisation of micro-constructions, which might be the fate of some of the lower-frequency expressions studied here (e.g. *ein Quäntchen*, *ein Tick*). At the same time, analogical forces cause micro-constructions to converge with respect to certain formal and/or functional features, creating more homogenous constructional families. It is remarkable that this convergence and growth has been occurring in the German constructional family under scrutiny, when considering that some of the micro-constructions originated from fairly diverse lexical sources, including concrete nouns like *Biss*(*chen*) 'bite', abstract nouns like *Idee* 'idea', a commercial weight in the case of *Quentchen/Quäntchen*, and even an adjective in the case of *wenig* 'minor, small'. The observed convergence and growth seems to be caused, above all, by the pervasive process of analogical thinking and pattern matching, i.e. the establishment of form–function associations across constructions (e.g. Fischer 2011; Traugott & Trousdale 2013: esp. section 1.6.4.2). For reasons outlined in Section 2, efficiency-driven automation is likely to be another basic force. Collectively, the diachronic trajectories of the micro-constructions examined here amount to a macro-process that can be thought of as (early) paradigmaticisation.

The macro-process of paradigmaticisation is a long-term effect of numerous (low-level) constructional changes whose directionality is constrained above all by the domain-general cognitive processes of analogy and automation. Early and advanced paradigmaticisation seems to involve different kinds of paradigms-as-schemas and different degrees of automation typically linked to the transition from syntax to morphology. In early paradigmaticisation, as typical of sets of fairly heterogeneous periphrastic constructions in syntax, the parts of the network seized by this process are micro-constructions as well as lower-level schemas at the meso-level. As long as the members of the constructional family exhibit rather heterogeneous properties, high-level generalisations such as macro-constructions can be expected to be only weakly present (if at all) in speakers' minds. This stage of paradigmaticisation involves emergent paradigms that are still relatively open; micro-constructions that are part of such emergent paradigms may be quasi-synonymous, and their use is still optional (cf. Diewald

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& Smirnova 2012). This phase is witnessed in the case of the quantifier/degree-modifier constructions in present-day German. In more advanced stages of paradigmaticisation, the relations between the family members become more rigid. The members tend to be formally more homogeneous, but quasi-synonymous uses have given way to mutually exclusive uses; and the paradigms are essentially closed. This stage of paradigmaticisation corresponds to degrees of grammaticalisation that are prototypically associated with (inflectional) morphology rather than periphrastic syntactic constructions. It seems that only as a constructional family approaches such late stages in its life cycle do the relations of its members become defined by one organisational unit at a very high level of abstraction.

Grammatical(ising) micro-constructions are not teleologically determined to become more homogeneous and meet in paradigms; still, this direction of change is highly likely. Closing this section, we summarise what we argue to be reasons for his long-term trend. One causal factor is how the domain-general cognitive process of analogy shapes language structure (e.g. Antilla 2003). We have discussed the constructional network constellations – "attractor sets" involving meso-constructions – that promote the analogical emergence and/or change of micro-constructions. We consider these analogical forces to be influential, but even beyond analogy as a cognitive basis of paradigmatic relations there are forces that lead grammaticalising micro-construction in similar directions, making them more alike as well. These directions are the well-known tendencies of semantic generalisation and morphosyntactic fixing and reduction. Cognitive mechanisms and motivations underlying these strongly directional changes in grammaticalisation include chunking, increasing ease of retrievability, habituation, neuromotor practice and frequency-induced predictability among others. Many of the underlying processes can be understood as concomitants of the even more general cognitive process of automation (Bybee 2010; Neels 2020). The asymmetry inherent in automated versus more controlled activity should be considered a cognitive key factor accounting for the unidirectionality of grammaticalisation: since highly automated grammatical operators are withdrawn from conscious control, they are very unlikely to be manipulated for more contentful, referential – i.e. more "lexical" – purposes (cf. Lehmann 2017; Haspelmath 1999). Automation serves efficiency; and, as pointed out in Section 2, grammatical paradigms represent efficient solutions in processing. In short, at the general level of language-related cognition and performance, paradigm formation is governed by efficiency, automation and analogy; at the level of linguistic representations, the locus of change can be modelled as clusters of interrelated schemas, above all micro- and meso-constructions.

5 Conclusion

In this paper, we have investigated a family of German quantifier/degree-modifier constructions against the theoretical background of construction grammar and in the light of research on grammaticalisation. Regarding the theoretical background, we have shown that construction grammar has a somewhat ambivalent relationship to paradigms: some proponents of constructionist approaches to language have rejected the concept, others have suggested that it might be theoretically useful for capturing horizontal relations in the construct-i-con, especially in the domain of mid-level constructions. Following up on a previous study showing that the development of *ein bisschen* and *ein wenig* bears many similarities to the development of English *a bit* in the sense that we see a gradual extension from more concrete to more abstract readings and from quantifier to degree-modifier uses, we have investigated the low-frequency constructions [*eine Idee* X], [*ein Tick* X], and [*ein Quäntchen* X] in contemporary German. The overall picture emerging from the corpus analyses is that the older quantifier/degree-modifier constructions served as attractor sets for an increasingly strengthened mid-level schema, i.e. meso-construction, thereby promoting the analogically driven grammaticalisation of younger micro-constructions. This scenario is supported by the finding that younger micro-constructions (i) approximate the usage patterns of more established ones, and (ii) "skip" stages on the cross-linguistically attested grammaticalisation path pre-partitive > partitive > quantifier > degree modifier. For modelling such linguistic developments, the constructionist idea of grammaticalising expressions being linked via meso-constructions has proved fruitful. Recognising types of grammaticalisation that are enabled by meso-constructions and analogy – as opposed to independent/"pure" grammaticalisation (Lehmann 2004) – moreover helps reconcile frequency-effect approaches with the phenomenon of low-frequency grammaticalisation. The infrequent modifiers *ein Tick* and *eine Idee* seem to owe their existence to an established template, but they also exhibit constraints that cannot be derived solely from a single overarching mid-level schema. Such properties specific to individual micro-constructions or subsets of constructions may be interpreted not just as persistence but as entrenched subschemas or local emergent paradigms. We have argued that the process of paradigmaticisation involves emergent paradigms of multiple orders in the sense of constructions at multiple levels of schematicity. Change is guided mainly by associations to micro-constructions and lower-level meso-constructions. Only in advanced stages of grammaticalisation and paradigmaticisation, when micro-constructions become sufficiently homogeneous, do higher-level meso-constructions and macro-constructions – which come closest

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to paradigms in the traditional understanding of the term – act as decisive organisational forces.

Data availability

Acknowledgments

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Chapter 10

Generics as a paradigm: A corpus-based study of Norwegian

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This paper examines generics as a part of human cognition, rooted in speakers' language knowledge in form of a grammatical paradigm. The paradigm proposed in this paper is based on a broader understanding of the notion, as presented in Diewald (2009) and Diewald & Smirnova (2010) among others. The matrix of the noun forms used in Norwegian in generic contexts is based on the models proposed by Radden & Dirven (2007); Radden (2009) and Pettersson (1976). The models of generics were adjusted to the data from the Norwegian language, collected in this corpus-based study.

1 Introduction

For many years, a *paradigm* was only associated with inflectional paradigms and morphology. However, a discussion on the matter in recent years has resulted in a new view on paradigms. A view that allows for a much broader understanding of the notion and the one that exceeds the branch of morphology.

The core of this paper is based on this new approach to grammatical paradigms which can be applied in examining different language phenomena. In this introductory section, the following questions will be addressed:

1. What is a paradigm in a broader sense?

2. How will the paradigms proposed by Radden & Dirven (2007); Radden (2009) and Pettersson (1976) be modified when it comes to Norwegian?

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3. How can a paradigm be used with generics?

In scholarly literature, one finds numerous mentions of paradigms, most of them understood as morphological systems. An example of that can be found for instance in Ackerman et al. (2009: 55), where paradigms are presented in a classic understanding of the term, namely as inflectional paradigms.

However, in this paper a different approach will be taken into account. Diewald (2009) and Nørgård-Sørensen et al. (2011) present a new view on paradigms, which will be discussed and utilised in this study.

In her discussion, Diewald (2009: 445) interprets paradigms as a representation of particular construction types. She points out that certain paradigms are obligatory, such as inflectional paradigms, whereas others are not. Genericity falls certainly in the second category – it can be expressed in many different ways and even though certain NP types occur in certain generic contexts, they are not limited to only such context.

Such an understanding of the notion allows for a claim that certain language phenomena, such as genericity, can in fact be rooted in speakers' language knowledge and consist of a well-organised system of available forms. One can therefore differentiate between the different forms and the interpretations they imply. Nevertheless, the obligatoriness of such a paradigm remains questionable.

Paradigms understood in a broader sense were also discussed by Nørgård-Sørensen et al. An example of Danish verbs that can be construed in different ways provided Nørgård-Sørensen et al. (2011: 72-73). For instance, the verb *skyde* 'to shoot', can occur with a direct object or with a preposition *på* 'at'. The same mechanism can be observed in case of generics, especially when it comes to BNs occuring in generic contexts. In Norwegian (and Swedish, which will be discussed later), where BNs are common, certain verbs can require BNs:

(1)   a. Hun er lærer.
          she is teacher-Ø
          She is a teacher.

(2)   a. Det er sunt   å ha   hund.
          is   is healthy to have dog
          It is healthy to have a dog.

The verb 'to be' in (1) requires a BN because professions, nationalities and religious beliefs are expressed without any article in Norwegian (cf. Swedish as disucussed by Pettersson 1976). This can be considered an obligatory paradigm

that follows certain grammar rules. In contract to this, the example (2) shows a paradigmatic use of a BN with the verb 'to have'. Here the BN functions as a concept of a dog, not a certain dog or a dog as the whole species. However, it is possible to say *å ha en hund* 'to have a dog', which does not change the meaning of the phrase. The examples illustrates therefore that certain paradigms, including the paradigm of genericity, are optional but nevertheless they structure the language.

Another notion connected to paradigms understood in a broader sense is paradigmaticity. According to Diewald (2009: 447), paradigmaticity is an essential property that distinguishes grammatical items from lexical ones. This view can also be found in Diewald & Smirnova (2010), where paradigmaticity and obligatoriness are perceived as vital elements of the grammaticalization process, based on the model of Lehmann.

In his seminal work on grammaticalization, Lehmann presents parameters of grammaticalizion. One of those parameters is paradigmaticity.

> What is meant here by paradigmatic cohesion or paradigmaticity is the formal and semantic integration both of a paradigm as a whole and of a single subcategory into the paradigm of its generic category. This requires that the members of the paradigm be linked to each other by clear-cut paradigmatic relations, especially opposition and complementarity. (Lehmann 2015: 141)

The main requirement when it comes to Lehmann's model is the clear-cut relation between the elements of a paradigm. Complementarity or opposition might not seem as clear-cut in case of generics and different noun forms used with generic NPs. However, analysing generics in texts where a broader context was provided, proved that certain noun forms complement each other in some contexts or exclude each other in other contexts.

The theoretical framework used in this paper is based on Diewald (2009); Diewald & Smirnova (2010) and Lehmann (2015). The approaches to grammatical paradigms presented in those studies will be combined with empirical data of Norwegian in order to evaluate the existing paradigms of generics proposed by Radden & Dirven (2007); Radden (2009) and Pettersson (1976). The models will be discussed in greater detail in the following section.

1.1 Genericity as a paradigm

Genericity is a language phenomenon that is present in every language studied to date Behrens (2000; 2005). However, there are no language devices used to express that phenomenon, despite the numerous theories on the matter (Liebesman

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2011; Collins 2018). Certain researchers claim the existence of a silent GEN-operator (Carlson 1977; 1982 and Chierchia 1998 among others), whereas others opt for the so-called 'simple view' on generics (Liebesman 2011) that does not take into account any operators and treats generics in the same way as quantified statements. Nevertheless, no empirical studies have shown the presence of a device that would be used solely to express genericity, even though numerous studies on the matter show that the phenomenon may be one of the language universals, present already in children's speech (Gelman & Tardif 1998; Leslie & Gelman 2012 among others).

In different studies concerning generics, the following claims on the paradigmatic nature of the phenomenon are made:

1. Genericity depends on one's cognitive competences (Collins 2018: 35).

2. Genericity is a linguistic universal (Leslie 2007: 381).

3. Genericity is an internal paradigm, rooted in speakers' knowledge about the world (Gelman & Tardif 1998; Leslie et al. 2011).

When it comes to the first claim, the fact that generics depend on one's cognition is closely connected to the paradigmatic view on the matter. Being able to interpret and produce generic NPs, sentences and texts means that certain aspects of the phenomenon are automatised – be it on the cognitive level or on the grammatical level.

Another claim is that genericity is a linguistic universal, as is proposed by Leslie (2007). Indeed, numerous studies confirm that children at a very early age are able to correctly interpret and produce generic statements (Gelman & Tardif 1998). This can also imply that generic knowledge is deeply rooted in one's cognition in the form of a paradigm (Leslie et al. 2011).

In the cognitive literature on the matter, one finds numerous studies with different models of genericity. For instance, Leslie et al. (2011) present a model of generic predications and types of references that may be construed with them in English. The model is based on the truth-value of the predications and can be applied when analysing generic sentences.

As has been mentioned, the models of generics that will be utilised in this study and modified according to the data, are those proposed by Radden & Dirven (2007); Radden (2009) and Pettersson (1976). The first two models are based on English where four noun forms can be used to express genericity, namely indefinite singular, indefinite plural, definite singular and definite plural. The noun

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	generic type	generic form	ex-/inclusiveness	generic meaning
(a)	representative generic	indefinite singular	exclusive	arbitrary instance representing its type
(b)	proportional generic	indefinite plural	exclusive/ inclusive	salient proportion of the type's reference mass
(c)	kind generic	definite singular	inclusive	prototypical subtype of a well-established type
(d)	delimited generic	definite plural	inclusive	delimited human set within a domain

Figure 1: 'Types of generic reference' (Table 2) in Radden (2009: 224).

forms and their generic meanings according to Radden's model are depicted in figure Figure 1.

All types of genericity are illustrated by Radden (2009: 224) as follows:

(3) A lion has a bushy tail.   representative generic

(4) Hedgehogs are shy creatures.   proportional generic

(5) The tiger hunts by night.   kind generic

(6) The Italians love pasta.   delimited generic

In the example (3), a member of the kind represents the whole species, indicating that having a bushy tail is a characteristic feature of most lions. Proportional generic is depicted with example (4) and it concerns prototypical members of the kind. Namely, most hedgehogs are shy and therefore the feature can be connected to the whole kind. In example (5) a reference to a kind is expressed with the use of indefinite singular NP. Kind-reference rarely allows for exceptions, therefore one may assume that a great majority of tigers hunts by night. The last category of generic expressions in English, namely delimited generic, is limited to human groups only, as can be seen in example (6). The definite plural generic in English cannot be used with other nouns, whereas in Norwegian this NP type occurs in many more generic contexts as will be discussed later in this paper.

A graphic representation of English generics is presented in figure Figure 2.

The generic noun forms, both definite and indefinite, singular and plural, have certain functions and interpretations assigned to them. For instance, indefinite singular is used when referring to a single member of a given group in order to state a generalisation about the whole species. A similar use is assigned to

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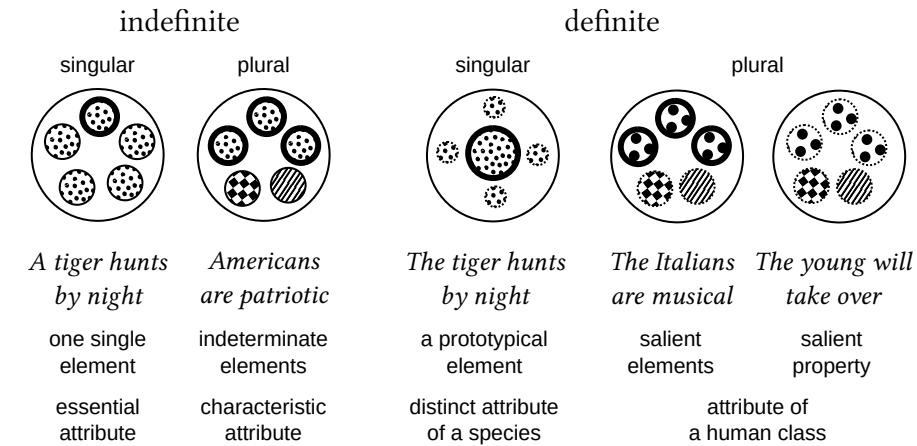
Figure 2: 'Types of generic reference' (Table 5.4) in Radden & Dirven (2007: 111).

definite singular which is used mostly as a kind-reference. The two plural forms – indefinite and definite – also have their typical uses according to the proposed paradigm. Indefinite plurals are used when a certain proportion of members in a group (the majority) share a given feature, whereas the definite plural form is used only when talking about groups of people.

Both models proposed by Radden & Dirven (2007) and Radden (2009) are constructed according to the restrictions mentioned by Lehmann (2015). Namely, the functions of generic forms are complementary and/or opposite to each other. This results also in relatively low interchangeability of the forms. For instance, delimited generics used solely when talking about people in English, cannot be utilised as kind generic and so on.

In both models, bare nouns are not taken into consideration as they are not very common in generic contexts in English. The only situation when BNs are used generically is with mass nouns. However, generic use of this noun type in Norwegian (and Swedish as will be presented) is a lot more frequent.

Let us now consider the paradigm of Swedish generics proposed by Pettersson (1976) in Figure 3,[1] where BNs occur as one of the available generic forms.

The author proposes a number of possible readings of noun forms that can occur with generics. Such references are divided according to the features 'limited

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[1]My translation into English. For the original graph in Swedish the reader is referred to the mentioned paper (Pettersson 1976: 121).
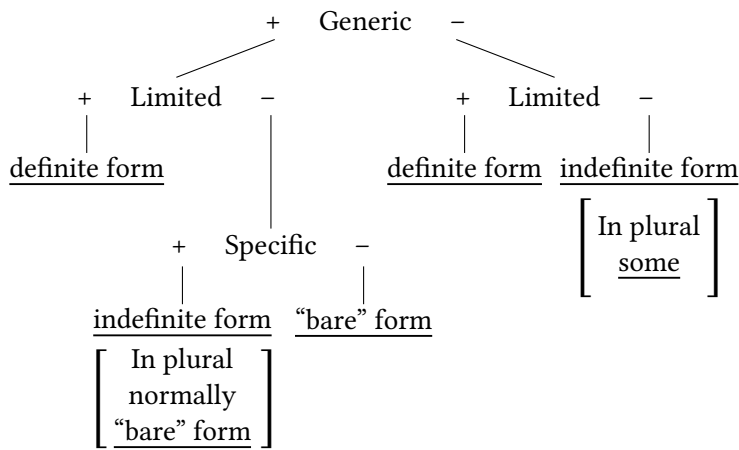
Figure 3: Reference types in Swedish according to Pettersson (1976: 121)

+/-' and 'specific +/-', according to which non-generic nouns are always specific (Pettersson 1976: 121).

Pettersson provides also a number of examples that illustrate generics presented in his model:

(7) En hund jagar katter.
a dog chase cat.PL
A dog chases cats.

(8) En pojke gråter inte.
a boy cry not
A boy doesn't cry.

(9) Gärdsmygen är en flyttfågel.
wren.DEF is a migratory.bird
The wren is a migratory bird.

(10) Hunden skällar.
dog.DEF bark
The dog barks.

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(11) Den svenske socialdemokraten lever och dör för sitt parti.
the swedish social.democrat live and die for his party
The Swedish social democrat lives and dies for his party.

All of the sentences above are generic, even though they include two NP types
– singular indefinite and singular definite. The examples in (7) and (7) illustrate
representative generic, where a single instance represents the kind, namely 'a
dog' and 'a boy' have some features that can be assigned to the whole group
(most/all dogs chase cats and none/almost none boys cry).

The examples (9), (10) and (11), where definite singular NPs are used, can be
seen as *classic* kind references, where a prototypical instance represents the whole
kind. One can assume that the prototypical wren shares a certain behaviour of
all wrens, just as the prototypical dog does and the prototypical politician sup-
porting the Social Democratic Party.

What is more, Pettersson's model allows for a bare form in non-specific con-
texts. Generic references are indeed considered non-specific, as they are gener-
alisations, not references to particular instances of a given kind (cf. Lyons 1977).

The examples of a non-specific use of bare nouns can be seen in the sentences
below Pettersson (1976: 127):

(12) Han är lärare.
he is teacher
He is a teacher.

(13) Han är prest.
he is priest
He is a priest.

Professions, nationalities and religious functions are used without articles in
Swedish (as well as in Norwegian). The reason for this, as Pettersson explains, is
that they describe general concepts. A similar statement can be said about bare
generics in Norwegian, as in the example (14).

(14) Ola vil kjøpe hus.
Ola will buy house
Ola will buy a house.

The NP 'house' is rather a concept than a particular house that Ola wants to
purchase. The conceptual BNs in Norwegian are neither singular nor plural –

they are neutral when it comes to number, as well as definiteness (cf. Halmøy 2016). They can also be used in generic contexts as will be shown later in the paper.

For the purpose of this study, all of the models presented above will be used to identify different types of generics in order to create a paradigm of the phenomenon in Norwegian. The following section focuses on the material used for the study, in Section 3 and Section 4 the results of the analysis will be presented, whereas Section 5 concerns implications for further research in the field.

2 Material

The study presented in this paper is based on a tailor-made corpus of generic texts. 170 texts (27 761 tokens in total) were retrieved from an online encyclopaedia *Store norske leksikon*. The encyclopaedia contains texts written both in *bokmål* and *nynorsk*, the two written standards of Norwegian. In this study, only texts written in *bokmål* are analysed.[2]

There were many reasons for the choice of encyclopaedic texts. First of all, generic NPs and sentences are not annotated in any of the available corpora of Norwegian so the phenomenon would have to be tagged manually anyway. Second of all, tagging genericity manually means that the texts chosen for the analysis must contain relatively many references of this sort in order for the material to be sufficient. This might not be the case should newspaper articles or literary texts be analysed, where the number of generic references is relatively low.

Finally, genericity is a context dependent phenomenon and it can occur both at the NP level, sentence level and text level (Behrens 2005). Therefore, choosing the texts that are primarily generic makes the analysis possible, also when it comes to the available resources.

The texts chosen for the study are at least one paragraph long and contain at least one generic reference. The texts are divided into five thematic categories:

1. people,

2. animals,

3. plants,

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[2]The reason for such a choice is that the *bokmål* language variant is used by the majority of the population (87.7% according to a study published by Gunnerud (2017)).

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4. tools,

5. other.

Below follow the example generic sentences from each of the categories:

(15) Vitnet   skal som utgangspunkt gi   forklaringen   umiddelbart
     witness.DEF shall as   rule   give explanation.DEF immediately
     for den dømmende rett.
     for the sentencing court
     A witness shall, as a rule, provide an explanation immediately to the
     sentencing court.

(16) Måkene   er hvite, grå og svarte.
     seagull.PL.DEF are white gray and black
     Seagulls are while, gray and black.

(17) Mammuttreet   er en   av de eldste levende organismer på Jorden.
     giant.redwood.DEF is one of the oldest living   organisms   on Earth
     The giant redwood is one of the oldest living organisms on Earth.

(18) Høvel er et verktøy til utjevning av treoverflater.
     planer is a tool   to even   of wood.surface.PL
     A planer is a tool used to even wood surfaces.

(19) En dal   er en langstrakt fordypning i   jordskorpen.
     a   valley is a enlongated deepening   in earth.crust
     A valley is an elongated deepening in the Earth's crust.

The category 'people' contains 20 texts, the categories 'animals', 'plants' and 'tools' contain 25 texts each, whereas the category 'other' consists of 75 texts. Differences in the number of texts in some of the categories is due to a few reasons. When it comes to the category 'people', finding a description of an ethnic group, a nationality or an official function that is written in *bokmål* and has the length of at least one paragraph, is a challenge. However, the difference of 5 texts in relation to the categories 'animals', 'plants' and 'tools' is not significant in terms of the results.

The category 'other' is the biggest of the whole corpus and it contains most diverse NP types. There are countable nouns and mass nouns, descriptions of objects, abstract notions, professions[3], elements of the landscape and many others. Since the category contains so many different nouns that do not fit to any of the other categories, it also consists of many more texts. This way numerous generic contexts are taken into account without the need to divide the corpus into many separate subcategories.

The choice of source texts for the analysis is subjective and its main purpose is to investigate the use of noun forms with different types of nouns – animate, inanimate, countable and mass, as well as those recognised as well-established kinds (WEKs) and familiar nouns (c.f. Carlson & Pelletier 1995 and Borthen 2007 among others).

The example sentences with each of those NP types can be found below ((20) – animate, (21) – inanimate and countable, (22) – mass noun and (23) – WEK):

(20) Hunden   var   det første husdyret   vårt.
      dog.DEF was   the first   domestic.animal our
      The dog was our first domestic animal.

(21) Skruer har   mange anvendelser og   former.
      screws have many   uses   and forms
      Screws have many uses and forms.

(22) Blekk bestod   opprinnelig av sot   eller farger fra   mineraler, planter
      ink   consisted originally   of soot or   dyes   from minerals, plants
      og   dyr.
      and animals
      Ink consisted originally of soot or dyes from minerals, plants and animals.

(23) Stavkirke   er en høyt   utviklet   kirketype,.
      stave.church-Ø is a   highly developed church.type
      A stave church is a highly developed church type.

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[3]Descriptions of professions are recognised as different from descriptions of groups of people. Professions are perceived more as concepts or a type of job, not people who perform a given task. Therefore the NPs of this sort are classified in the category 'other' and not 'people'. Official functions however, such as 'king', 'priest' etc. are classified in the category 'people'.

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All texts in the corpus were tagged manually for genericity and noun forms of the NPs in question. The material was annotated and analysed with the use of R software (version 3.6.1). A random sample of annotated texts was proofread by a native speaker of Norwegian in order to eliminate potential mistakes or misinterpretations of generic references. However, due to the fact that all texts in the corpus are generic, annotating genericity was a fairly simple task and no mistakes were found in the randomly generated sample.

3 General results

In the Norwegian nominal system, one finds five NP types, namely: BN (*hund* 'dog'), indefinite singular (*en hund* 'a dog') and plural (*hunder* 'dogs'), as well as definite singular (*hunden* 'the dog') and plural (*hundene* 'the dogs'). Among the five NP types, BNs seem to have the least stable status. In recent years, it has been discussed whether BNs are marked for number and definiteness. According to one view, they can be considered indefinite and singular (Borthen 2003), whereas others claim that BNs are neutral in terms of definiteness and number (cf. Halmøy 2016). As will be presented in this section, the second view seems to be more plausible. BNs are not considered singular or plural, neither are they considered (in)definite.

All nouns tagged as generic were counted and summed up in Table 1.

Table 1: Generic noun forms in the corpus – general results

	BN	IndSg	DefSg	IndPl	DefPl
number	345	31	185	230	79
%	39.66	3.56	21.26	26.44	9.08

As can be seen, the three most frequently occurring noun forms include bare nouns, indefinite plural and definite singular. The two other forms, namely indefinite singular and definite plural, were used less frequently.

The main tendencies for the use of different noun forms already show that certain of them are used in many more contexts than other ones. For instance, BNs were used in numerous examples throughout all corpus texts, both as first mentions and as subsequent mentions. What is worth pointing out is that first mentions in many of the corpus texts were both encyclopaedic entries and subjects of the first sentences. This may be one of the reasons for such a frequent use

of BNs. However, in many of the texts BNs appeared also as subsequent mentions, following often other noun forms used earlier in the text.

The second most often used noun form was indefinite plural, seen often as *default* when it comes to expressing genericity in Germanic languages (cf. Carlson 1977; Carlson & Pelletier 1995; Chierchia 1998; Pettersson 1976 among others). The collected data proves that this claim holds also for Norwegian (see Section 3.4).

Another aspect that was also observed in the corpus, was the position of generic NPs in the corpus texts. The results are shown in Table 2.

Table 2: Generic noun forms – position in a sentence

	number	%
initial	443	50.92
non-initial	427	49.08

As can be seen, position of generic nouns in the corpus did not influence the choice of different noun forms, as there were almost as many initial NPs as there were non-initial ones.

What is more, functions of generic NPs were annotated. This way it was possible to see grammatical roles the nouns had and whether there were some main tendencies. Indeed, as can be seen in Table 3, in the majority of generic sentences, the NPs in question occurred as subjects. Many generic sentences given as examples of genericity in the scholarly literature have a similar structure – generic nouns are much more often subjects than objects. This tendency was observed also in the corpus. Other grammatical functions, such as genitive modifiers, were much less frequent.

Table 3: Generic noun forms – function in a sentence

	number	%
subject	577	66.32
object	146	16.78
genitive modifier	34	3.91
other	113	12.99

In this paper, questions concerning NP's position and function in generic sentences will not be considered. They are not central to the issue of paradigms and,

as has been shown above, they do not seem to influence the use of different noun forms in generic texts. In the following subsections, all five noun forms will be discussed with reference to genericity in Norwegian.

3.1 Bare nouns

Bare nouns used generically with countable nouns were frequent in the corpus and their use was often conceptual, as can be seen in the example (24).

(24) I   middelalderen var det   badstue i alle byer.
      In Middle.Ages   was there sauna-Ø in all   cities
      In Middle Ages there were saunas in all cities.

Some researchers consider BNs to be marked for number and closely connected to singular nouns (see e.g. Borthen 2003), whereas others claim that the noun form is neutral in terms of number and definiteness (Halmøy 2016).

As has been mentioned before, the second interpretation is utilised in this study. BNs, such as 'badstue' in the example above, cannot be interpreted as a specific sauna, rather a concept of it. Similarly as in example (14) mentioned before, most of the BNs from the corpus represent a concept and are therefore neutral when it comes to number and definiteness.

The noun 'sauna' in (24) does not refer to any particular sauna but rather to the concept of it. The BN used in the example is not marked for number or definiteness and it is therefore difficult to match that use to any of the generic categories from the models of Radden & Dirven (2007) and Radden (2009). However, the graph proposed by Pettersson (1976) accounts for such a context, depicting it as a non-specific, non-limited generic.

Another conceptual use of BN can be observed in example (25), where a profession is described with the use of this noun form.

(25) Psykolog   er en person med utdanning i   psykologi.
      psychologist is a   person with education in psychology
      A psychologist is a person with education in psychology.

In English, a similar example can be rendered with indefinite singular to suggest that any given psychologist needs to have education in the field in order to perform the profession. In Norwegian however, the reference is expressed with a bare noun, making the profession more of a concept than an actual person working in the field.

The bare noun form, most widely used throughout all corpus texts, appeared also in sentences with WEKs and familiar nouns, namely nouns that are recognised as well-known in a given language and/or culture, as can be observed in the example (26).

(26) Stavkirke   er en høyt   utviklet   kirketype   (...).
      stave.church is a highly develop-PST church.type
      A stave church is a highly developed type of church (...).

Again, the reference to a stave church is conceptual as the BN used in the sentence above does not suggest number or definiteness. What is more, familiar nouns are often used as BNs and/or definite nouns, which suggests that they function in a way as proper names (cf. Carlson & Pelletier 1995).

3.2 Indefinite singular

Indefinite singulars were very rarely used in the corpus and in the two of the categories, namely 'animals' and 'plants' there were no instances of indefinite singulars. Indefinite singular, according to Radden (2009), is a representative generic type, used when an instance represents its type. Such use is prototypical in the sense that one element of the group or one member of the whole kind is referred to in order to denote the whole group/kind. An example of such a use of indefinite singular can be found in (27).

(27) En plateskrue   er spiss og laget   av herdet   stål.
      A flat-head.screw is sharp and make-PST of tempered steel
      Flat-head screws are sharp and made of tempered steel.

In the sentence about a plate screw, a characteristic feature of that object is described, making a generic reference possible. The essential attribute (Radden & Dirven 2007: 111) of an arbitrary instance (Radden 2009: 224) makes the reference prototypical.

Kind reference can also be expressed with indefinite singular, similarly as in the models presented in the previous section. However, such kind reference is also prototypical as it utilises a single referent in order to denote a whole kind. The features of a single member of a kind are then projected over the whole group.

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3.3 Definite singular

Definite singular is regarded by Radden (2009) as typical kind generic. Petters-son (1976) however treats definite singular generic as prototypical, similarly to indefinite singulars mentioned above.

In the example (28), 'the ballpoint pen' serves as a prototype for all pens of this sort. It was not a single pen that was invented at that time but rather the whole kind.

(28) Kulepennen   ble oppfunnet på 1800-tallet.
      Ballpoint.pen-DEF was invented   in 19th.century
      The ballpoint pen was invented in the 19th century.

Definite singulars were among the three most used noun forms in the corpus. They occurred as kind references as in the example above, but also with mass nouns, familiar nouns and WEKs. As has been already mentioned, the definite forms, both singular and plural, are often used with well-established kinds, as can be seen in the example (29).

(29) Hunden var det første husdyret   vårt.
      dog-DEF was the first   domestic.animal ours
      The dog was our first domestic animal.

What one interprets as a familiar noun or a well-established kind, depends greatly on one's language intuition and the context in which the noun appears. However, certain nouns, such as 'the dog' in the example above, are widely used in everyday speech and are therefore recognised as familiar.

The interpretation of certain NPs as WEKs or familiar nouns does not influence the results presented in this study. The generic contexts are clear and analysing certain NPs as familiar or well-established enriches the analysis with additional contexts.

3.4 Indefinite plural

Indefinite plurals are considered *default* generic noun forms in many Germanic languages. In the corpus, this noun form occurred very frequently, indicating clear-cut kind reference, as in the examples (30) and (31) below.

(30) Hunder kan ha   en rekke forskjellige pelsformer.
      Dog-PL can have a range different   fur.forms
      Dogs can have a range of different furs.

(31) Skater   er god matfisk.
      skate-PL are good edible.fish
      Skates are good edible fish.

According to Radden (2009: 224), indefinite plural indicates *a salient propor-tion of the type's reference mass*. In other words, when making a kind reference with this noun form, the speaker refers to the majority of the kind and gener-alizes over the whole kind this way. Radden & Dirven (2007: 111) mention also a *characteristic attribute* that allows to make such generalizations. The attribute however, does not need to be applicable to 100% of the population to be valid. Such generic usage is also mentioned by Leslie et al. (2011) and is called for 'ma-jority characteristic'. This type of generic expressions consists of a salient feature that allows for exceptions.

The exceptions for the examples above can be dogs without any fur or skates that may not be considered good edible fish by certain people. Nevertheless, a hairless dog or inedible skates would still be classified as members of their re-spective kinds, despite the lack of a certain feature.

It is nevertheless questionable whether such NPs, while referring to a certain proportion of the class, can occur as BNs in contexts that allow for exceptions. BNs, as has been discussed before, often express concepts, not particular entities that one can generalise about.

3.5 Definite plural

The last of the noun forms and generic types mentioned in the models, are defi-nite plurals. Definite plural generic in English is considered as delimited generic, since its use is rather limited. In Norwegian, many more generic contexts are pos-sible. One of the contexts is the same as in English, namely it concerns groups of people.

Surprisingly enough, kind reference can also be rendered with definite plural, as can be seen in the examples (32) and (33).

(32) Flaggermusene har   et enormt   næringsbehov.
      Bat-PL-DEF   have an enormous nutrition.need
      (the) bats need an enormous amount of food.

(33) Humlene   danner samfunn   (...).
      bubmblebee-PL-DEF create society-PL
      Bumblebees create societies (...).

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The sentences about bats and bumblebees are *classic* generic sentences, where a truth about a given kind is stated. The interpretation is very similar as in case of indefinite plural generic, and is translated this way into English.

Definite plural generic is nevertheless not an equivalent of indefinite plural and the kind reference expressed this way differs in interpretation. In the corpus, not all animal species were described with definite plurals. In the majority of the cases, the form was used in descriptions of small animals and animal species considered gregarious, as in the case of bumblebees.

Another uses of delimited generic included WEKs, as well as quasi-mass nouns. Quasi-mass nouns are nouns that are grammatically countable but can be perceived as mass. The example in (34) shows this phenomenon.

(34)   Torvmosene   har   en eiendommelig bygning.
       peat.moss-PL-DEF have a   homogeneous structure
       Peat moss has a homogeneous structure.

In Norwegian, the NP 'peat moss' is grammatically countable but, as can be seen in the example above, is often regarded as a mass. Another explanation for the use of definite plural generic in this case is the fact that moss consists of many smaller elements and therefore gives an impression that there are many different plants seen as a whole.

4 Discussion

All of the noun forms and their generic uses discussed in the previous sections, are based solely on the corpus material. The list of available generic contexts for each of the forms is not exhaustive but it allows to see main tendencies when it comes to genericity in Norwegian. In this section, a model of Norwegian generics will be presented in the form of a paradigm, based on those tendencies.

Table 4 comprises generic contexts that were frequent in the corpus texts. The cells marked with + indicate that the feature was present, whereas those marked with - lack a given feature. Asterisks in certain cells indicate modifications of the contexts in question. The cells marked with asterisk in case of kind reference indicate a conceptual or prototypical reference discussed in the previous sections. Mass nouns expressed with definite plural and equally marked with asterisk refer to quasi-mass readings, such as 'the peat moss' in the example (34).

The presented paradigm of Norwegian generics differs from a feature matrix in that it comprises different NP types, as well as contexts in which they occur. For instance, if we take a look at BNs we see that this NP type is not only used

Table 4: Paradigm of Norwegian generics

	BN	IndSg	DefSg	IndPl	DefPl
kind reference	+*	+*	+*	+	-
mass	+	-	+	-	+*
countable	+	+	+	+	+
WEK	+	-	+	-	+
familiar	+	-	+	-	+
people	+	-	+	-	+
concepts	+	-	-	-	-
prototypes	-	+	+	-	-
gregarious	-	-	-	-	+

with numerous types of nouns (countable, mass, WEK etc.) but it also expresses kind reference, can be used to describe groups of people or to express concepts. The semantic basis for this paradigm is therefore a generic interpretation of a given NP type together with the context in which such an interpretation occurs.

As can be observed, bare nouns were used in most diverse contexts throughout the corpus texts. Almost all of the aspects mentioned, except for prototypes, were rendered with this noun form in at last one of the texts. Concepts were expressed only with BNs, accounting for the opposition between concepts and prototypes.

The three noun forms that express kind reference through prototypes, namely BN, indefinite singular and definite singular, are complementary with each other but stand in contrast to a *classic* kind reference rendered with indefinite plural.

Another interesting aspect of the proposed model are countable nouns. In the Norwegian data, in generic contexts, countable nouns are used with all noun forms. Such an abundance of possible noun forms does not mean that the forms are interchangeable in all possible contexts. For instance, when a kind reference of a countable noun is made, four noun forms are available but only one refers to the majority of the kind in question, whereas others render a prototypical reference.

One of the biggest changes with reference to the original models of Radden & Dirven (2007) and Radden (2009), are the contexts available for definite plural generics. Unlike English, in Norwegian a few other uses were found in the corpus, such as quasi-mass plants or references to gregarious animal species. Definite plural generic is still limited in Norwegian but to a lesser degree than it is the case in English.

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The contexts in the Table 4 above are the most frequent ones. For instance, in certain examples subkinds and hyperonyms were accessed through definite plural generics but those reference types were not in the majority and are therefore lacking in the model.

Understanding genericity as a paradigm rooted in speakers' language knowledge and intuition implies that certain noun forms are grammaticalized in generic contexts and to a certain degree. For instance, a *default* kind reference is always rendered with indefinite plural, although a few other noun forms could take on such reading. The diversity of the available generic forms in Norwegian is still greater than it is in English generics but the observed tendencies prove that a paradigm of generic noun forms exists.

5 Implications for further research

The study presented in this paper concerns one written standard of Norwegian and generic use of different noun forms in enecyclopaedic texts. A possible extension of the analysis could include the other written standard of the language, namely *nynorsk*. What is more, different text genres could be considered in examination of generics, should the resources allow for such a wide analysis.

Another aspect that was out of the scope of this study was the possible influence of dialects on the written standard. The Norwegian dialects are rather difficult to study, especially when it comes to such subtle phenomena as genericity. One of the reasons for this is the diversity of all dialects, as well as the diversity within the main dialect groups. Finally, dialects are mostly restricted to the spoken medium and therefore a study on genericity in Norwegian dialects would have to be based on discourse analysis or interviews.

As has been shown in this paper, genericity is a complex phenomenon that is considered by some researchers as one of the language universals. A paradigmatic view on the matter may help to further develop the matrix of generics that would be applicable for all aspects of the language, both written and spoken.

Last but not least, the presented paradigm could be considered when analysing the process of grammaticalisation in Norwegian. Currently, the different noun forms that occur in generic contexts show a relatively low degree of grammaticalisation, compared for instance to Romance languages, where genericity is almost always definite (cf. Kabatek 2013). It is possible that as the grammaticalisation of articles proceeds, also genericity will be grammaticalised to a certain degree.

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Chapter 11

The importance of paradigmatic analyses: From one lexical input into multiple grammatical paradigms

XX Kragh

please provide an abstract

1 Introduction

We[1] take as our starting point that when lexical entities grammaticalize, they enter pre-existing or new grammatical paradigms. Therefore, paradigms are important for the understanding of the reanalyses leading to grammaticalization.

In the line of Henning Andersen's thinking we propose to conceive of grammar as composed of sets of paradigms (Nørgård-Sørensen et al. 2011). We here use the term *paradigm* not in the narrow sense of inflectional paradigm, nor entirely in the line of the 'classical' grammaticalization approach of Lehmann (1985), but in the more general sense of a selectional set, composed of marked and unmarked members (Andersen 2008: 19). In previous studies (Kragh & Schøsler 2014; 2015; 2016; 2019; 2020) we have shown that the notion of a paradigm is useful for the understanding of grammatical structure.

In order to show the pathway of a lexical item into grammar, i.e. into a number of different paradigms, we will use the lexical French verb *voir* 'to see' and the derived phrases, *voici* and *voilà* to illustrate our point. When aiming at analysing

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[1]An extensive part of this work has been done in collaboration with Lene Schøsler. I am deeply grateful for her valuable suggestions and comments on this article.

a polysemous and multifunctional lexical entity like this verb, the researcher can chose between a polysemic or a monosemic approach, see Waltereit (2002; 2006). But when studying how a lexical item grammaticalizes, we do not consider this discussion to be the essential one. Rather, we think that the most interesting point is how the lexical item enters different grammatical paradigms.

Our approach combines synchronic and diachronic investigations on electronic corpora. Each paradigm shown in the following presents the synchronic results of diachronic grammaticalization processes, based on synchronic paradigmatic analyses of very different functions. The paradigms comprise the following grammatical categories: verbal categories: tense, aspect and mood, i.e. progression (*je le vois qui arrive* 'I see him arriving'), voice (*il se voit refuser l'accès* 'he is refused entrance), pragmatic categories: presentatives (*voilà le bateau* 'here is the boat'), focus constructions (*voici le bateau qui arrive* 'here is the boat arriving'), and discourse markers (*le bateau arrive, tu vois* 'the boat is arriving, in fact'), and the category of particles, i.e. the preposition *vu* 'considering' and the subordinate conjunction *vu que* 'considering that'. We shall illustrate our paradigmatic approach by means of three cases: the progressive paradigm, the presentative paradigm, and the focalization paradigm. We aim to show that the progressive and the presentative paradigms are preconditions for *voir*'s entrance in the focalization paradigm. By distinguishing the different contexts (labelled *syntactic domains*) in which the forms appear, and state which semantic fields they cover (labelled *frames*), we identify synchronic paradigms of which the above exemplified grammatical entities are members. We claim that synchronic paradigms provide a precise and relatively simple presentation of what otherwise would seem utterly diverse usages of a lexical entity.[2]

2 Definition of paradigmatic level

The grammatical paradigm can be identified through a set of five defining features (Nørgård-Sørensen et al. 2011: 5-6).[4]

First, the grammatical paradigm is a *closed set of items*, the number of members being fixed at a given language stage.[5] In Modern French, for instance, the category of tense, aspect, and mood (TAM) comprises the simple verb forms

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[2]An alternative way of presenting a selection of diverse usages is the lexical approach provided in dictionaries. Please, see appendix for an illustration of a rather unsystematic presentation with a mix of lexical and grammatical information on the different functions of *voir* in the digital dictionary Robert Connecteur[3].

[4]This section is a revised version of section 2.1 in Kragh & Schøsler (2015).

[5]In fact, over time most paradigms change their member list, so a *given language stage* is an

present, past, future tenses: *voit*, *vit*/*voyait*, *verra/verrait*, and a number of an-alytical forms.

Secondly, for every paradigm, the *syntactic domain*, i.e. the syntagmatic con-text in which it applies must be specified. Thus, in Modern French, the domain of the category TAM is the simple or composed finite verb form of a given sentence.

Thirdly, a paradigm has a *semantic frame*, i.e. a common semantic denominator, here tense, aspect and mood, within which the content of its members is defined in opposition to one another. Semantic frames are language specific and cannot be taken to be equivalent to the cognitive networks of Croft (2001) and Croft & Cruse (2004).

Fourthly, the choice between the members is *obligatory*, in the sense that in the given syntagmatic context that defines the domain of the paradigm, speakers cannot avoid selecting one of the members; they must choose for example one verbal form - simple or analytical, the present, the past, the future, etc. - to express the temporal and aspectual dimension of a given utterance.

Fifthly, a paradigm is *asymmetric*, distinguishing between marked and unmarked members, possibly in a hierarchical structure. In Modern French, the present tense is the unmarked form, because it appears in both perfective and imperfec-tive contexts and displays such values as present, habitual, progressive, recent past, near future, etc. Compared to the present tense, the simple past, the imper-fect, the future and the conditional are all marked, i.e. restricted, both in regard to the type of context in which they appear, and in regard to their temporal and aspectual values.

Whereas *the domain* refers to the syntagmatic delimitation of the paradigm on the expression level, *the frame* is its counterpart on the content level. A paradigm is not a pure expression system, but a sign system with the domain-and-frame pair constituting a unity of expression and content (according to the terminology of the Danish Functional tradition, see Engberg-Pedersen et al. 1996.

3 Lexical level – level 0

Before studying the processes of grammaticalization, we must start at the lexical level, i.e. the valency level with its possible constituents in free use. It is crucial here to distinguish the lexical level from the construction level; it is the former that provides the input to a grammaticalization process.

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abstract notion to be defined for each paradigm at a specifically defined synchrony. Since lan-guages are always changing, it is not an easy task to identify the relevant synchronic stages permitting the establishment of a paradigm, without the risk of circular argumentation.

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Voir is a highly polysemous verb, characterized by its frequency in usage. Such high frequency verbs are likely to grammaticalize or pragmaticalize (cf. Bolly n.d.: 674-675).

This makes *voir* an obvious choice as object in an attempt to demonstrate how one single lexical item tends to enter a number of new constructions, thus becoming member of a wide range of grammatical paradigms. Each new usage of *voir* being routinized is a candidate for entering a new paradigm. Craig (1991) introduces the term *polygrammaticalization* to refer to this phenomenon where one particular lexical entity is the source of multiple grammaticalization chains.

As we see it, the function of a given lexical item in a given context triggers the specific meaning of this lexical item. Thus, when *voir* is used in new contexts, it is ascribed new functions (e.g. presentation, focus, progression, passive voice, discourse marker, etc.); they provide new meanings. We have shown in previous studies that secondary features of the original construction turn into primary features during the process of grammaticalization (cf. for instance Kragh & Schøsler 2015). In what follows, we will first present the lexical level (level 0), and subsequently a number of paradigms into which forms of the verb *voir* have entered as a result of the grammaticalizations.
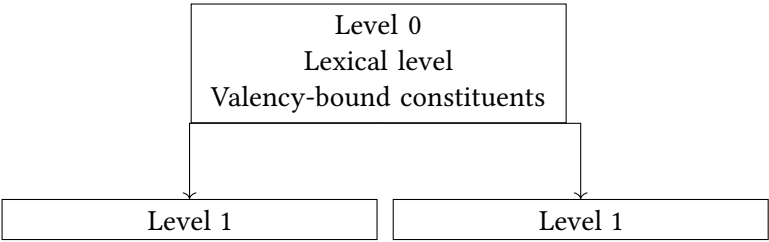
Figure 1: Lexical level (Level 0)

As indicated in Figure 1, Level 0 is lexical, it comprises the valency-bound constituents that combine with the verb *voir*, e.g. noun phrases ((1), possibly with a subordinate relative clause ((2), complement clauses (3); a number of nexus constructions,[6] with infinitive (4), with deictic relative clause (5), with present or perfect participles (6) and (7), with adjectives (8), with nouns (9)) or with a prepositional phrase as object complement (10) and (11):

(1) Je vois Jean.
     'I see John.'

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[6]The term *nexus* describes the relation of interdependency with the antecedent/referent in contrast e.g. to subordinate relative clauses. This implies that the antecedent/referent cannot be omitted, e.g. *Je vois perdu/président* etc.

(2) Je vois la maison qui est rouge.
'I see the house which is red'

(3) Je vois que Jean arrive
'I see that John arrives'

(4) Je le vois arriver
'I see him arrive'

(5) Je le vois qui arrive
'I see him arriving'

(6) Je le vois jouant le football
'I see him playing soccer'

(7) Je le vois perdu
lit. 'I see him lost'

(8) Je le vois heureux
lit. 'I see him happy'

(9) Je le vois president
lit. 'I see him being president'

(10) Je le vois en bonne humeur
'I see him in a good mood'

(11) Je le vois en vainqueur/comme vainqueur
lit. 'I see him the winner'

No other verb of visual perception has such a large number of possible constituents (Willems & Defrancq, 2000: 10).

We now proceed from the lexical level to the levels of grammatical paradigms.

4 Paradigms: levels 1 to 3

4.1 Level 1: Reanalysis of the subordinate relative clause into the deictic relative clause

Levels 1 and 2 and later on also level 3 illustrate the use of *voir* in contexts where the original meaning of the verb *voir* is bleached due to a number of reanalyses and grammaticalizations.

Level 1 comprises the initial reanalysis and grammaticalization that are a prerequisite of the grammaticalizations at level 2 and 3.

At level 1 we find the grammaticalization of the deictic relative clause due to a reanalysis of the relative subordinate (see Kragh & Schøsler 2014; 2015), i.e. reanalysis of level 0. This is an important step for the subsequent grammaticalizations that involve *voir* in a progressive context (level 2).

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┌──────────────────────────────────────────┐
│                 Level 0                    │
│              Lexical level                 │
│         valency-bound constituents         │
└──────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────┐
│                 Level 1                    │
│  Reanalysis of the deictic relative as construction │
└──────────────────────────────────────────┘
                     │
                     ▼
┌──────────────────────────────────────────┐
│                 Level 2                    │
│               Paradigm 1                   │
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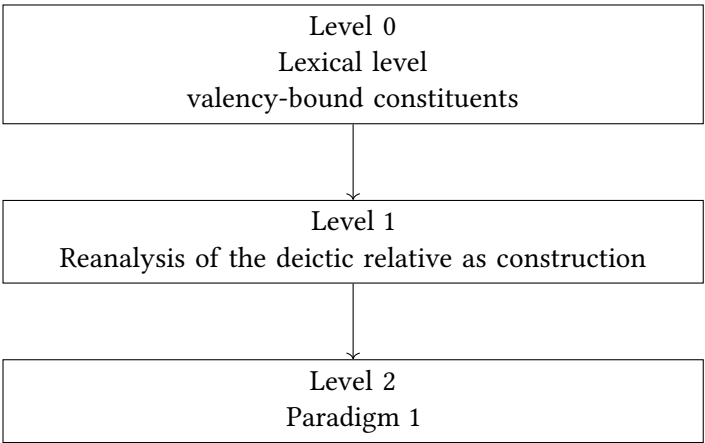
Figure 2: From lexical level to grammatical level

In example (2), we had a clear subordinate relative clause which was part of the NP. In certain contexts, such subordinate clauses are reanalysed. We have found bridging examples in which the hearer may interpret the message of the relative clause in two different ways, see example ((4.1)):

(12)   S'i erent venu apoier;/quant le cuens vit son escuier/qui sor le noir destrier estoit
       'they have come to rest there/when the count saw his horseman/who was sitting on the black horse'
       (Chrétien de Troyes, ca. 1213, p. 98, vers 3207-10)

The interpretation of this example is twofold. The point may be that the count firstly catches sight of his horseman and subsequently discovers him sitting on the black horse. However, another interpretation is also possible, providing a bridging or critical context, which permits reanalysis because of the ambiguity (see Diewald 2002: 117, Heine 2002), namely a holistic (progressive) perception of the horseman sitting on the horse.

We will consider the second interpretation of example (4.1) to be the result of the speaker reanalysing the subordinate type of relative clause, in the following way: A (subordinate relative clause specifying an NP) > B (deictic relative construction), i.e. into a new type of verbal complementation, without immediate change of the surface manifestation. This implies that the construction has acquired not only a) a different function, which is not a subordinate, but a nexus relation, but also b) a different meaning. This meaning has been described tentatively in terms of a holistic vision. Moreover, this vision is progressive, by which term we refer to *an ongoing process performed by the referent of the direct object of the verb of perception.*[7]

4.1.1 From level 1 to level 2, Paradigm 1

As the deictic relative construction (B) is accepted in the speech community and increases its use, it is *embedded,* i.e. integrated into grammar (Herzog et al., 1968: 185). Once embedded, it can be considered as yet another way of expressing progressivity: (*Je vois*) *Pierre qui chante*, 'I see Peter singing', cf.Figure 3:

Paradigm 1 shows the inventory of the progressive constructions in French in form of a paradigm. Please note that this paradigm has a diachronic dimension. From the early times until the end of the 17th century, *Pierre va chantant* is the unmarked form, also diatopically. *Pierre est à chanter* and *Pierre est après chanter* are diatopically and diastratically marked, whereas *Pierre est en train de chanter* turns into the unmarked form of progression from the 19th century. The type *Je vois Pierre qui chante* is a marked member of the paradigm from the 17th century. It is the only member that provides a holistic perception of the activity, perceived in its progression, and which has a different referent for the subjects of the two verbs (S1≠S2).

4.1.2 From level 1 to level 2, Paradigm 2

Let us now consider another paradigm, that of the fossilized imperative form of *voir, voici*/*voilà*, reanalyzed as member of the presentation paradigm.

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[7]For a more detailed description of the origin of the deictic relative, we refer to Kragh & Schøsler (2014: 178-182).

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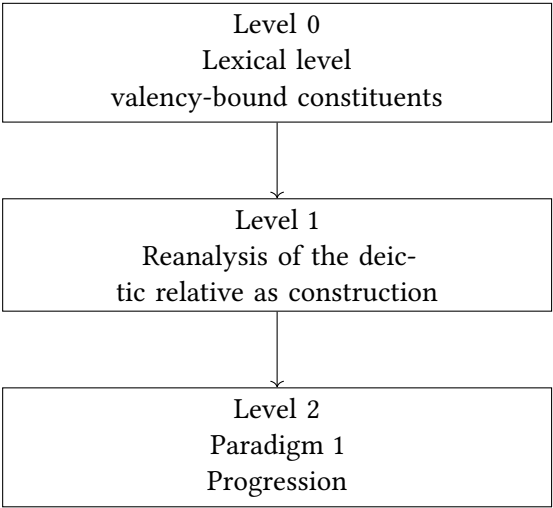
Figure 3: From Level 0 to Paradigm 1

Table 1: Progressivity in French, progressive constructions (Kragh & Schøsler, 2015: 290)

Syntactic domain	V1 +V2, S1=S2/S2≠S2	
Semantic frame	**+Progressivity**	
Diachronic perspective	**Expression**	**Content**
unmarked form (→1700)	*Pierre va chantant*	S1=S2, +progressivity, ±durativity
marked form	*Pierre est à chanter*	S1=S2, +progressivity, +durativity
marked form	*Pierre est après chanter*	S1=S2, +progressivity, +durativity
unmarked form (1800→)	*Pierre est en train de chanter*	S1=S2, +progressivity, +durativity
marked form	*Je vois Pierre qui chante*	S1≠S2, +progressivity, ±durativity holistic vision

French has a number of ways of expressing presentation: *c'est X*, *il y a X*, *il est X*, *voici/voilà X*, *X* being the presented entity. These constructions have been examined in Kragh and Schøsler 2019, where the inventory of presentation is discussed and a list has been established in accordance with Lambrecht (2000; 2001) and Riegel et al. (2009 [1994])):

C'est X:

(13)   Ce n'est pas eux
       'It's not them'

   Il y a X:

(14)   Il y a quelqu'un
       'There is someone'

   Il est X:

(15)   Il était une fois une belle princesse
       'Once upon a timer there was a beautiful princess'

   Voici/voilà:

(16)   Voilà une belle fleur
       'Here is a beautiful flower'

(17)   Voici mon ami Pierre
       'Here is my friend Peter'

(18)   Voilà ma soeur que tu as rencontrée hier
       'Here is my sister whom you met yesterday'

(19)   Voilà qu'il neige
       'It is snowing'

(20)   Voilà comment faire
       'This is how to do it'

These presentatives can be listed in a paradigm (see Paradigm 2). In the following, we will focus on the presentatives *voici* and *voilà*, derived from the verb *voir*.

In this construction, *Voici/Voilà X* presents a referent *X*, known or unknown to the hearer, examples (16) and (17). This kind of constructions is also called *neutral focus structures*. *X* can be an NP, (16) and (17), possibly with a subordinate relative clause (18), a complement clause (19), or an interrogative clause (20).

It is characteristic for such constructions that they address explicitly the hearer and thus have the feature of +deixis, since they presuppose the presence of the hearer in the factual or fictive conversation space. In Modern French, *Voilà X* is more frequent than *Voici X*, and the latter is marked, since it has reduced possibilities of usage. The constructions are especially frequent in oral, informal communication, in accordance with the deictic character of the forms.

We consider the presentative construction exemplified in (16) to (20) a reanalysis of the lexical usage of the verb *voir*, level 0. This reanalysis is illustrated by a bridging example (21) in which the hearer may interpret the message of the utterance in two different ways. Example (21) is from Chanson de Roland, 1100 (cited in Oppermann-Marsaux 2006: 79):

(21)   Dreiz emperere, veiz me ci en present
       'Rightful Emperor, see me present here' (interpretation 1)
       'Rightful Emperor, here I am before you' (interpretation 2)

According to interpretation 1, the speaker addresses the Emperor by saying 'see me being present here'; thus, *veiz* expresses visual perception. However, another interpretation is also possible, interpretation 2, which is a way of attracting the attention of the emperor. Thus, example (21) provides a bridging or critical context which permits reanalysis because of the ambiguity (cf. Diewald 2002; Heine 2002), namely an intention of attracting attention, i.e. a purely pragmatic function. We will consider the second interpretation to be the result of the speaker reanalysing the imperative form of *voir* followed by the particle *ci*, in the following way: A (imperative form of the verb of perception *voir* followed by a locative particle *ci*, meaning 'see here') > B (presentative), i.e. into a new way of attracting attention to a given item, without immediate change of the surface manifestation. This implies that the construction has acquired not only a) a different function. Thus, it is no longer a finite verb + a particle, but it is reanalysed as a fixed form with a particle, with b) a different meaning, i.e. presentation or attracting attention. Consequently, the new function is pragmatic.

This process of reanalysis and grammaticalization of the imperative verbal form in the second person singular and merge with the two adverbs *-ci* and *-là*,

losing its full lexical meaning, is schematized in Figure 4. We refer to Kragh & Strudsholm (2013: 212-216) Kragh & Schøsler (2014: 190-191) for a detailed account of the reanalysis from level 0 to level 1 and to Oppermann-Marsaux (2006) for an account of the initial steps of this process. In the course of the subsequent reanalysis from level 1 to level 2, *voici/voilà X* is reanalysed as a member of the presentative paradigm:
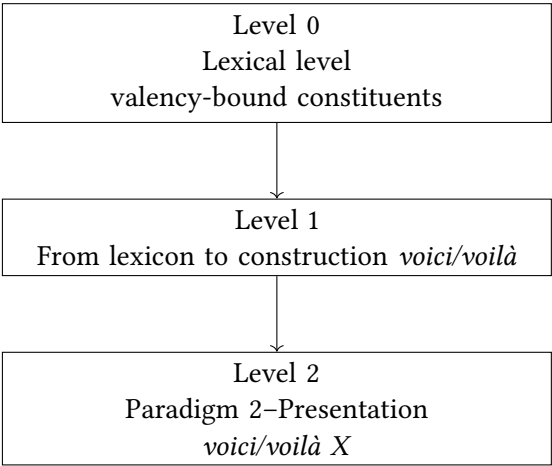
Figure 4: From Level 0 to Paradigm 2

The presentative paradigm is listed in Paradigm 2 and contains the constructions exemplified above in (13) to (20).

The syntactic domain, i.e. the syntagmatic context, for the presentative paradigm (S)VX is a verb with or without a subject, followed by X as the presented entity. The semantic frame is *presentation*, in the sense of an introduction of important and new information to the hearer about a new or already known entity. With respect to the content, the members of the paradigm are, in addition to *presentation*, characterized by two features, namely the option of identification/opposition and deixis. *Identification* refers to the designation of a referent, possibly combined with the designation in opposition to one of more other potential referents (*opposition*). The feature of *deixis* refers to the possibility of addressing explicitly a hearer and it presupposes the presence of the hearer in the factual or the fictive conversation room.

Having the least restrictions of the four members of the paradigm, *c'est X* is the unmarked member (Kragh & Schøsler 2019). In addition to presentation, *c'est X* is characterized by its capacity of identifying, possibly with specification of opposition. Deixis is possible. *Il y a* can only mean presentation, not identification,

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Table 2: Presentative paradigm

Syntactic domain	(S)VX	
Semantic frame	**Presentation**	
Member of paradigm	**Expression**	**Content**
C'est X	*Ce n'est pas eux*	Presentation/identification
unmarked member		±opposition
		±deixis
Il est X (fossilized variant of *il y a*)	*Il était [une fois] une belle princesse*	Presentation -identification
marked member		-deixis
Il y a X	*Il y a quelqu'un*	Presentation
marked member		-identification
		-deixis
Voici/voilà X	*Voici/voilà ma sœur*	Presentation
marked member		-identification
		+deixis

and deixis is not required. *Il est* is the fossilized variant of the productive *il y a*; it has the same content as *il y a*, but is mainly used in introductions of fairy tales or to express time. *Voici/voilà* expresses presentation, not identification, but does, on the other hand, express deixis. The three latter are thus marked in proportion to *c'est X*.

4.1.2.1 From level 2 to level 3, Paradigm 3

Members of the presentative paradigm can occur with a subordinate or deictic relative clause and thereby enter a paradigm of focalization: *c'est X qui/que...*, *il y a X qui/que...*, *voici/voilà X qui/que...* In addition to these, we have focalization constructions which are not derived from a presentative construction: *il a X qui/que..., X est là qui/que...*

The focalization paradigm comprises the following members:

C'est X qui/que...:

(22) Ce n'est pas eux qui arrivent
      'It is not they who arrive'

Il y a X qui/que...:

(23)   Il y a quelqu'un qui arrive
       'There is someone coming'

Il est X qui/que…:

(24)   Il était une fois une belle pricesse qui vivait dans un vieux château
       'Once upon a time there was a beautiful princess who lived in an old castle'

Voici/voilà X qui/que…:

(25)   Voilà ma sœur qui arrive
       'Here is my sister arriving'

Il a X qui/que…:

(26)   Il a les cheveux qui tombent
       'He has his hair falling off'[8]

X est là qui/que…:

(27)   Elle est là qui pleure
       There she is crying'[9]

As illustrated in example ((25)), the presentative *voici/voilà* can occur with a deictic relative. This is a new reanalysis which presupposes a number of previous reanalyses, presented in the preceding sections. We hypothesize that the reanalyses at the constructional level 1 from subordinate to deictic relative, and the grammaticalization of *voici/voilà* are more or less parallel processes during the Middle Ages, because we have no textual evidence that one should precede the other. The subsequent reanalyses as members of paradigms, Paradigm 1 and 2 (level 2), respectively, take place from the 16th century onwards (Oppermann-Marsaux 2006; Kragh & Schøsler 2015).

This means that both the ideas of progression and simultaneity expressed in the deictic relative, and presentation expressed by the grammaticalized form *voici/voilà* are preconditions for the grammaticalization of the focus construction composed of *voici/voilà* and a deictic relative.

Voici/voilà are deictic expressions rooted in the time of the utterance, and in order to express simultaneity, typical of holistic constructions, the verb of the deictic relative must be in the present tense. This is in accordance not only with

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[8]Example cited from Conti (2010)

[9]Example cited from Furukawa (2000: 104)

our analysis of *voici/voilà X* and a deictic relative, where they are part of a progressive, holistic and deictic construction (Kragh & Schøsler 2014), but also with the view of Lambrecht (2000: 50-51), who states that the function of this type of focus construction is to present an entity and to express new information about it at the same time. Furthermore, the structure presupposes a known referent (Riegel et al. 2009 [1994]: 456).

Examples (28) to (30) illustrate the difference between presentation and focalization. Example (28) shows a presentative construction with a pronominalization of the object *ma sœur*. Example (29) is also a presentative construction where the NP is specified by a subordinate relative, and the NP including the relative is pronominalized in the object pronoun *la*.

In contrast, example (30) illustrates grammaticalized focalisation. Here we find a dislocation of the object *ma sœur* specified not by a subordinate relative, but by a deictic relative being part of a nexus construction. In this case, pronominalization by means of *la* of the antecedent *ma sœur* concerns only the NP *ma sœur*, not the deictic relative.

(28)　Voilà ma sœur → la voilà
　　　'Here is my sister → here she is'

(29)　Voilà ma sœur que tu as rencontrée hier → la voilà
　　　'Here is my sister whom you met yesterday → here she is'

(30)　Voilà ma sœur qui arrive → la voilà qui arrive
　　　'Here is my sister arriving → here she is arriving'

The possibility of a personal pronoun as antecedent is a specific feature of a deictic relative; this possibility does not exist for subordinate relative clauses, cf. example (29).

Summing up the reanalyses leading to the grammaticalized focalization paradigm: this paradigm is the result of reanalyses of two constructions at a higher level, each with its own paradigmatic structure (Paradigm 1 and Paradigm 2). This implies that characteristic features of Paradigm 1, e.g. progression, and of Paradigm 2, e.g. that *voici* and *voilà* function as presentatives are inherited in Paradigm 3, as schematized in Figure 5:

The focalization paradigm is presented in Paradigm 3 and is composed of the constructions exemplified above (examples (22) to (27)).
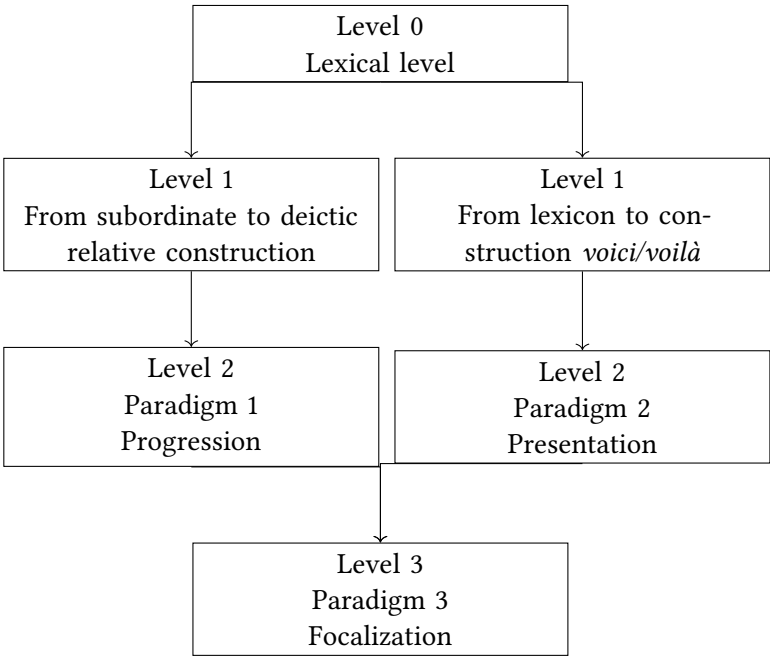
Figure 5: From Paradigm 1 and 2 to Paradigm 3

The *syntactic domain* of the paradigm of grammaticalized focalization differs from that of presentative (neutral focus) because it contains an obligatory *qui*/*que*-clause, which is presented in the figure as follows: (S)VX *qui/que*-clause. The *semantic frame*, i.e. the grammatical meaning, is focalization in the sense that the structures provide important and new information to the interlocutor on new or already known entities.

With respect to the content, the members of the paradigm are, in addition to *focalization*, characterized by four features, namely the option of expressing *opposition*, further information by means of a subordinate relative vs. a nexus construction introduced by *qui/que* expressing progressivity, the option of deictic concord, and the option of deixis. The feature of *deictic concord* refers to coincidence with respect to person, time and place between the matrix and the subordinate or deictic relative. Thus, in example (25) and (30) we find deictic concord between *Voilà* and *qui arrive*, because of the simultaneity of the perception (*voilà*) and the perceived object (*ma sœur qui arrive*). This concept should not be confused with *deixis*, which refers to the possibility of addressing a hearer explicitly and presupposes the presence of the hearer in the factual or the fictive conversation room. Thus, there is *deixis* in example (25) and (30), because the

speaker is addressing the hearer explicitly, which presupposes the presence of the hearer in the factual or the fictive conversation space.

Table 3: Paradigm of focalization (Kragh & Schøsler, 2019)

Syntactic domain	(S)VX(*qui* / que-clause)	
Semantic frame	Focalization	
Member of paradigm	Expression	Content
C'est X qui/que unmarked member	*C'est n'est pas eux qui arrivent*	focus ±opposition subordinate relative ±deictic concord -deixis
Il est X qui/que marked member	*Il était [une fois] une belle princesse qui vivait dans un vieux château*	focus -opposition -deixis
Il y a X qui/que marked member	*Il y a quelqu'un qui arrive*	focus -opposition nexus construction +deictic concord (?) -deixis
Voici / voilà X (*qui/que*) marked member	*Voici/voilà ma sœur qui arrive*	focus -opposition nexus construction +deictic concord +deixis
Il a X qui/que marked member	*Il a les cheveux qui tombent* 'he has his hair falling off'	focus -opposition nexus construction +deictic concord -deixis Object related to subject, e.g. body part, family member, etc.
Il est là qui/que marked member	*Elle est là qui pleure* 'there she is crying'	focus -opposition nexus construction +deictic concord -deixis Presupposes prior indication of spatial location

The structures identified as focus constructions have been characterized by

means of the following criteria: focalization ±opposition, subordination *versus* nexus relation, ± deictic concord between the matrix and the relative clause, with restrictions on tense, mood, etc., and ±deixis in the construction. According to these criteria, *C'est X qui/que*-clause is the unmarked member of the paradigm; since it has fewest restrictions. It expresses focalization with or without opposition to another referent and can have deictic concord between the matrix and the relative, but has no restrictions on tense and mood, etc., and it has no deixis in the construction. The relation between the relative clause and the antecedent is a relation of subordination. The other structures are opposed to this unmarked construction as marked members. Among the marked members, the *il y a qui/que*– structure is less marked than the *voici/voilà qui, il a X qui,* and *il est là qui*– structures because it has fewer restrictions on tense and mood. It does not express deixis. The three last mentioned structures share the following criteria: like *il y a qui/que* they focus without indication of opposition and they form a nexus construction. In contrast with *il y a X qui/que*, they have deictic concord, but only *voici/voilà X qui* has deixis, i.e. presupposes the presence of the hearer in the same factual or fictive conversation room as the speaker.

As illustrated in Figure 5, level 3 presupposes level 2, and not vice-versa. In chronological terms this relation of precondition is confirmed by our corpus investigations, which show that level 2 can be found from the 13th century, whereas level 3 occurs by the end of the 17th century, spreading in the 19th century. Therefore, it is reasonable to conclude that grammaticalized focalization is the result of a reanalysis of the presentative structure, with the consequence of focalization being clearly marked.

It is our hypothesis that other usages of the verb *voir* have led to pathways similar to the ones presented so far and into other grammatical paradigms as suggested in Section 1.

We shall now give a brief overview of four of these processes of reanalyses and grammaticalizations leading to *tu vois* as a discourse marker (Section 4.2), *se voir* as a member of the voice paradigm (Section 4.3), *vu* as preposition, and *vu que* as member of the paradigm of subordinate conjunctions (Section 4.3.2), in order to show further perspectives of our approach.

4.2 Level 1: Reanalyses to constructions and sub-levels

The origin of verbal discourse markers like *Tu vois, mon bonheur passe* 'You know, my happiness is waning' is widely debated (Kragh to appear(a)). Our hypothesis is that this type of discourse markers originates as a reanalysis of a complex

phrase of the type *Tu vois que mon bonheur passe → tu vois, mon bonheur passe* (level 1)
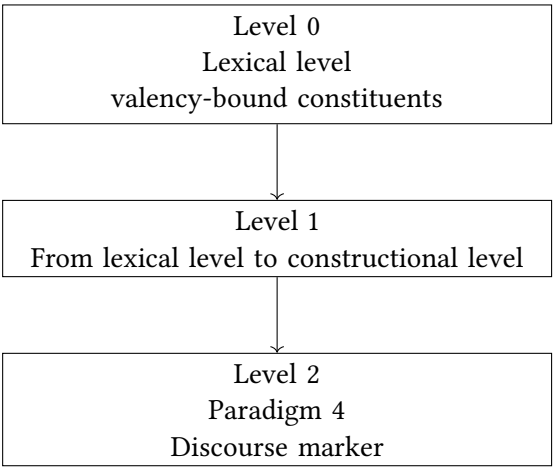
Figure 6: From constructional level to paradigmatic level, Paradigm 4

Based on this first reanalysis, we have observed a subsequent reanalysis of *tu vois, vous voyez, voyons* and *voilà* leading to the creation of a discourse marker paradigm. For a detailed account of this process, we refer to Kragh (to appear[a],[b]).

4.3 Level 1: Reanalyses to constructions and sub-levels

As illustrated in Figure 7, we assume that different reanalyses also precede the voice paradigm (Paradigm 5), and the preposition and conjunction paradigms (Paradigms 6 and 7), respectively.

4.3.1 Level 2, Paradigm 5

As part of the voice paradigm, the reflexive form of *voir* (see example (31)) competes not only with the active construction (*Le gouvernement augmente les prix* 'The government raises the prices'), but also with other ways of expressing a state of affairs without an agent or an active subject, e.g. the passive construction (*Les prix sont augmentés* 'The prices have gone up'), the unaccusative construction (*Les prix augmentent* 'The prices go up'), the reflexive unaccusative construction (*Les prix s'augmentent* 'The prices go up'), and the deontic reflexive passive (*Le vin blanc se boit frais* 'White wine should be served chilled'), and a number of impersonal constructions (e.g. *On augmente les prix* 'The prices have gone up').
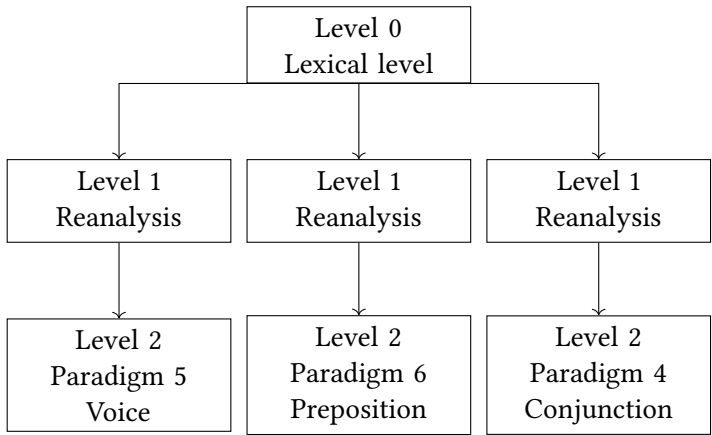
Figure 7: From constructional level to paradigmatic level, Paradigms 5, 6, and 7

Periphrastic reflexive passives, typically with an affected person as subject are found with the verbs *faire* ('to make') and *voir*, and express mainly activities that are adverse to an affected person:

(31)   Pierre se voit refuser l'accès
        'Peter is denied entrance...'

Thus, they differ from both active, unaccusative, and passive constructions with regard to types of agent and patient, and to the event described. It should be noted that *se voir* has been included among passive constructions by a few other scholars, e.g. by Grevisse & Goosse (2008: 1051) where it is called 'auxiliaire du passif' et classified among the semi-auxiliaries, whereas Defrancq (2000: 188) uses the term *passif de l'objet prépositionnel*.

4.3.2 Level 2, Paradigms 6 and 7

Paradigms 6 and 7 have in common that they are formed from the past participle of *voir*. Preliminary results indicate that *vu* as a preposition occurs from the 14th century (Rey & Rey-Debove 1986), and suggest that this precedes the conjunction *vu que*, of which the first occurrences found are from 1538 (Frantext). Both the preposition *vu* and the conjunction *vu que* are grammatical entities; they have no lexical, but only grammatical meaning. Therefore, we do not consider them to be cases of lexicalization. Whether *vu que* is the result of a regrammation of

the preposition *vu* or rather of the participle (as in *Il a vu que…*) remains to be investigated.

Paradigm 6 comprises the paradigm of prepositions. This paradigm includes simple forms like *à, de, en, dans, pour*, etc., complex formations such as *à côté de, au lieu de, pour cause de*, etc., and forms derived from past participles like *vu, attendu, exepté, compris, hormis*, as well as present participles such as *suivant, durant, moyennant*, etc. An exemple is:

(32) **Vu** la situation actuelle, il faut partir au plus vite
      '**Considering** the actual situation, we must leave as quickly as possible'

Paradigm 7 is the paradigm of subordinate conjunctions. It includes the simple conjunctions *que, si, comme, quand*, etc., complex conjunctions like *à mesure que, avant que, dès que, bien que, à la condition que*, etc., and conjunctions derived from verbal forms *excepté que, vu que, suppose que,* and *suivant que, pourvu que, attendu que*.

(33) **Vu que** le texte de la recommendation n'est pas encore prêt, il est assez difficile de poursuivre l'analyse
      '**As** the text of the recommendation is not yet ready, it is rather difficult to undertake further analysis'

5 Conclusions

As stated at the beginning of this paper, we think that when lexical entities grammaticalize, they enter pre-existing or new grammatical paradigms, and that therefore the concept of paradigm is important if we wish to understand the reanalyses that lead to grammaticalization. We claim that grammar is composed of sets of paradigms in the general sense of a selectional sets, composed of marked and unmarked members, cf. Figure 8.

An approach of grammar as sets of paradigms provides a precise and relatively straight forward presentation of what otherwise would seem utterly diverse usages of a lexical entity, see the illustration of a lexical approach in appendix 1, which confuses very different levels of usage, lexical, semi-grammatical, and grammatical.

We hope to have provided convincing evidence in favour of this claim.
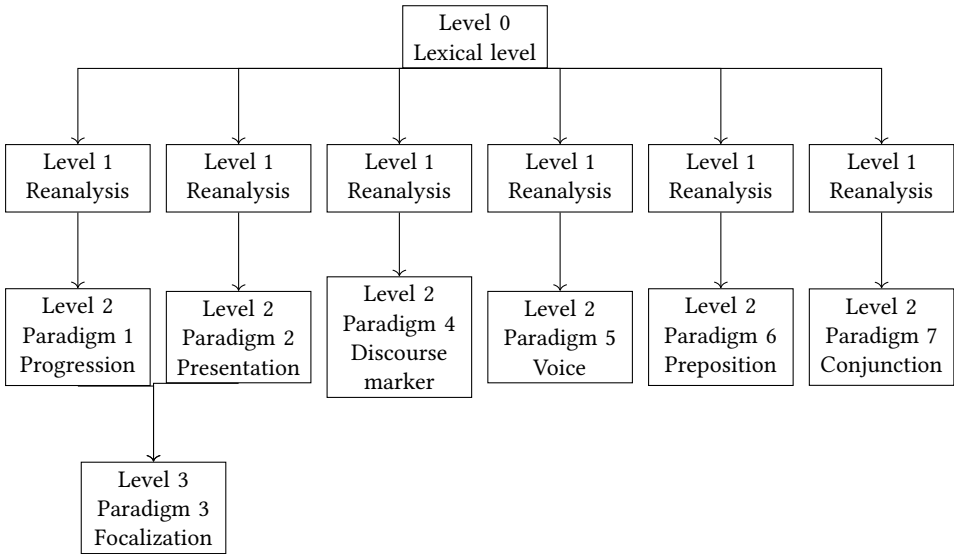
Figure 8: Overview

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Appendix

From Dictionnaire de Robert Correcteur (https://dictionnaire.lerobert.com/)
voir [vwaʀ] **verbe**
(d'abord *veder;* vient du latin *videre,* d'une racine signifiant « connaître »)

1. **verbe intransitif** Percevoir les images des objets par le sens de la vue.

Les aveugles ne voient pas (⇒ NON-VOYANT). N*e voir que d'un œil* (⇒ BORGNE). *Voir trouble. Je ne vois pas clair.* — loc. *Voir loin:* prévoir.

2. **verbe transitif direct**

a) Percevoir (qqch.) par les yeux. *Voir qqch. de ses yeux, de ses propres yeux. Je l'ai à peine vu.* ⇒ APERCEVOIR, ENTREVOIR. *Cela fait plaisir à voir. C'est à voir*: cela mérite d'être vu. *J'ai vu cela dans le journal.* ⇒ 1 LIRE.

   i. loc. *Voir le jour*: naître ; (choses) paraître.

   ii. **Faire voir**: montrer. *Faites-moi voir ce livre.* — (personnes) *Se faire voir*: se montrer. « Il y a des endroits où il faut se faire voir » (LA BRUYERE). — loc., fam. *Va te faire voir*! : va au diable.

   iii. **Laisser voir**: permettre qu'on voie ; ne pas cacher. *Ne pas laisser voir son trouble.*

   iv. Avoir l'image de (qqn, qqch.) dans l'esprit. ⇒ se REPRESENTER. M*a future maison, je la vois en Bretagne.* — loc., fam. *Tu vois ça d'ici*! : tu imagines.

   v. Voir... (+ inf.). *Je vois tout tourner.* — loc. *Je te vois venir*: tes intentions sont connues. *Il faut voir venir*, attendre. — (sujet: chose) *Le pays qui l'a vue naître*, où elle est née. *Ce journal a vu son tirage augmenter.*

   vi. Voir... (+ attribut). *Je voudrais la voir heureuse. Vous m'en voyez ravi, navré.* — loc., fam. *Je voudrais vous y voir*! (dans cet état, cette situation): à ma place vous ne feriez pas mieux.

b) Être spectateur, témoin de (qqch.). *Voir une pièce de théâtre.* ⇒ ASSISTER à. — *Voir une ville, un pays*, y aller, visiter. loc. (traduction d'un dicton italien) *Voir Naples et mourir.* — *Voir du pays**: voyager. — loc., fam. *On aura tout vu*: c'est le comble. *J'en ai vu (bien) d'autres!*: j'ai vu pire. *En faire voir (de toutes les couleurs) à qqn*, le tourmenter.

c) Être, se trouver en présence de (qqn). *Je l'ai déjà vu.* ⇒ RENCONTRER. *Elle ne veut voir personne.* ⇒ RECEVOIR; FREQUENTER. A*ller voir qqn*, lui rendre visite. — fam. *Je l'ai assez vu*, j'en suis las. *Je ne peux pas le voir, pas le voir en peinture*: je le déteste. ⇒ SENTIR.

d) Regarder attentivement, avec intérêt. ⇒ EXAMINER. I*l faut voir cela de plus près. Voyez ci-dessous.* — *Voir un malade*, l'examiner.

i. Avoir une vision complète. «*On ne voit rien quand on se contente de regarder*» (ROUSSEAU). — absolt «*Apprendre à voir est le plus long apprentissage de tous les arts*» (GONCOURT).

e) fig. Se faire une opinion sur (qqch.). — absolt *Nous allons voir*, réfléchir (avant un choix). *On verra*: on avisera plus tard. *C'est tout vu*: c'est tout décidé. — prov. *Qui vivra verra*: l'avenir seul permettra de juger. — *On verra bien*! : attendons la suite des événements.

  i. ***Pour voir***: pour se faire une opinion. — *en menace Essaie un peu, pour voir*!

  ii. ***Voir que, comme, combien***... ⇒ CONSTATER. *Voyez comme le hasard fait bien les choses*!

  iii. ***Voir si***... *Voyez si elle accepte*, informez-vous-en.

  iv. (en incise) *Vois-tu, voyez-vous*, appuie une opinion en invitant à la réflexion.

  v. ***Voir***, après un v. absolt: pour voir. fam. *Voyons voir*! *Écoutez voir* !

  vi. ***Voyons***!, s'emploie pour rappeler à la raison, à l'ordre. *Un peu de bon sens, voyons*!

f) Se représenter par la pensée. ⇒ CONCEVOIR, IMAGINER. V*oir la réalité telle qu'elle est. Vous voyez, tu vois ce que je veux dire. Je vois*!: je comprends fort bien.

  i. *Voir grand*: avoir de grands projets. — *Elle voyait en lui un ami*, elle le considérait comme...

g) ***Avoir*** qqch. ***à voir* (avec**, **dans**) : avoir une relation, un rapport avec (seulement avec pas, rien, peu). *Je n'ai rien à voir dans cette affaire*: je n'y suis pour rien. — absolt *Cela n'a rien à voir*!: c'est tout différent.

3. **verbe transitif indirect *Voir à*** (+ inf.): songer, veiller à. *Nous verrons à vous dédommager.* — fam. *Il faudrait voir à voir*! (menace, avertissement).

se voir [səvwaʀ] **verbe pronominal**

1. (réfl.) Voir sa propre image. *Se voir dans la glace.* — (avec un attribut d'objet, un compl.) *Elle ne s'est pas vue mourir.* ⇒ SENTIR. —– (semi-auxiliaire) *Elle s'est vue contrainte de renoncer*: elle fut, elle se trouva contrainte... *Elle s'est vu refuser l'entrée*, on lui a refusé... — S'imaginer. *Ils se voyaient déjà gagnants, au bout de leurs peines.*

2. (récipr.) Se rencontrer, se trouver ensemble. *Ils ne se voient plus.* ⇒ se FRE-QUENTER. — loc., fig. *Ils ne peuvent pas se voir*: ils se détestent. ⇒ se SEN-TIR.

3. (passif) Être, pouvoir être vu. *Une pièce qui se voit avec plaisir.* — Être re-marqué, visible. *La retouche ne se voit pas.* — Se rencontrer, se trouver. *Cela se voit tous les jours*: c'est fréquent. *Cela ne s'est jamais vu*: c'est impossible.

vu, vue [vy] **adjectif, nom masculin et préposition**

1. **adjectif**

   a) Perçu par le regard. — loc. *Ni vu ni connu*: sans que personne en sache rien.

      i. **nom masculin** *Au vu et au su de tout le monde*: au grand jour. ⇒ OUVERTEMENT. — *C'est du déjà-vu!*, ce n'est pas une nou-veauté.

   b) Compris. *C'est bien vu?* ellipt *Vu?* — fam. *C'est tout vu!*, il n'y a pas à revenir là-dessus.

   c) *Être bien, mal vu*, bien ou mal considéré. ⇒ APPRECIE.

2. ***Vu*** préposition

   a) En considérant, eu égard à. *Vu la qualité, c'est cher.*

   b) ***Vu que*** locution conjonctive Étant donné que. ⇒ 1 ATTENDU que.

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Paradigms regained

Set blurb on back with \BackBody{my blurb}