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Lynn Anthonissen

INDIVIDUALITY IN LANGUAGE CHANGE

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Individuality in Language Change

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Contents

Abbreviations

(.)	level of significance: $p < 0.10$
(*)	level of significance: $p < 0.05$
(**)	level of significance: $p < 0.01$
(***)	level of significance: $p < 0.001$
ACI	Accusativus cum Infinitivo ‘accusative and infinitive’
ARCHER	A Representative Corpus of Historical English Registers
BNC	British National Corpus
CHILDES	Child Language Data Exchange System
CLMET	Corpus of Late Modern English Texts
COHA	Corpus of Historical American English
EC-Model	Entrenchment-and-Conventionalization Model
ECCO	Eighteenth Century Collections Online
ECM	Exceptional Case Marking
EEBO	Early English Books Online
EM	EMMA Medium (see EMMA)
EMMA	Corpus of Early Modern Multiloquent Authors
EQ	epistemic qualification
Evans	Evans Early American Imprints
FSP	Functional Sentence Perspective
ICC	intraclass correlation coefficient
NCI	Nominativus cum Infinitivo ‘nominative and infinitive’
OCR	Optical Character Recognition
OED	Oxford English Dictionary
PAM	Partitioning Around Medoids
PCU verb	perception/cognition/utterance verb
PPP	prepositional passive
PPCEME	Penn-Helsinki Parsed Corpus of Early Modern English
PPCMBE	Penn-Helsinki Parsed Corpus of Modern British English
PPCME	Penn-Helsinki Parsed Corpus of Middle English
TCP	Text Creation Partnership

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Part I: **Introduction**

1 Introduction

All too often, even though language change necessarily involves change in the speech habits of speakers, linguists have treated speakers as if they were somehow irrelevant to the process of language change.
— Joseph (1992: 127)

The present work starts from the simple, nearly trivial observation that what we understand by language—"the collective art of expression" (Sapir 1921: 246)—must be intrinsically connected to the people who put it to use.[1] The nature of this connection and its relevance for language change, however, are still poorly understood, in part because historical linguistics has traditionally looked at language change as an aggregate, community-level phenomenon, with little regard for individual differences in how language is processed and produced. As Joseph (1992) and others long before him have suggested (see, for instance, the early works by Osthoff and Brugmann 1878 and Paul 1920), the scientific study of linguistic change will benefit from a change of perspective, one that allots individual speakers the attention they deserve.

Pursuing this line of inquiry, the present study has singled out two interconnected case studies of constructional change in English that provide the empirical foundation for exploring the interaction between the individual and the communal. Specifically, I examine the cognitive and social mechanisms underlying the spread of two special passive constructions—the prepositional passive and the nominative and infinitive—in five generations of early modern writers. The following excerpt from one of Oldmixon's works illustrates a prepositional passive in the first clause (*was prevailed upon*) and a nominative and infinitive (or NCI) in the final clause (*be said to V*).

(1) *But the King was prevailed upon to consent to it, by a pathetical Letter from the Earl himself; which Letter is mentioned by Whitlock, but with this Doubt, A Letter was said to be sent.*
(0180300300, John Oldmixon, 1727)

In general terms, the aim of this book is twofold. The historical-descriptive or philological objective consists in providing a detailed analysis of the rise of the special passives in Early Modern English, how these constructions came into being

1 Several ideas and some results presented in this book have appeared in journal articles and book chapters, some co-authored with other members of the *Mind-Bending Grammars* project team; see Appendix, Section 10.4 for details.

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and how their communal expansion pans out in individual usage. The broader theoretical and methodological objective is to further our understanding of language as a complex adaptive system, which holds that "[t]he structures of language emerge from interrelated patterns of experience, social interaction, and cognitive processes" (Beckner et al. 2009: 2). By viewing individual speakers as non-static agents within the macro-system, complex adaptive systems theory also speaks to various issues relating to individuality in language (change). Central questions this work aims to shed light on include the extent of interindividual variation, the possibility and nature of lifespan change and how these constellations at the micro-level scale up to changes at the macro-level of language.

In what follows, I will delineate the general theoretical issues that are at stake, set out the research questions that crystallize from this discussion and present a first sketch of the corpus and methods. I will end this introductory chapter with an outline of the chapters that follow.

1.1 Issues at stake

Grounded in usage-based and constructionist approaches to language which hold that linguistic knowledge is shaped and reshaped by experience (e.g. Goldberg 1995; Croft 2001; Bybee 2010; Schmid 2020), the work presented in this book takes as its starting point the idea that no two speakers have the same mental grammar. While the existence of individual differences in language use has been attested extensively in corpus-linguistic research (e.g. Coniam 2004; Barlow 2013; Schmid and Mantlik 2015) and even forms the backbone of research and applications in related fields (e.g. stylometry and authorship attribution, forensic linguistics), an increasing body of research now indicates that this holds true not only for language use, but also for L1 acquisition of core grammatical constructions (Chipere 2001, 2003; Dąbrowska and Street 2006; Street and Dąbrowska 2010, 2014). Street and Dąbrowska (2010), for instance, demonstrate that native speakers may differ substantially in their attainment of constructions that are generally considered part of the core grammar of a language (e.g. passives and quantifiers), thus challenging the widely-held belief that children converge on the same grammar despite substantial variation in language input (e.g. Crain and Thornton 1998). Language development has also been shown to exhibit effects of education (Mills and Hemsley 1976; Street and Dąbrowska 2010, 2014) and socioeconomic status in general (Ginsborg 2006; Pakulak and Neville 2010).

Given these facts, it is only natural that usage-based linguistics has long moved past the idea that linguistic theory must be "concerned with the ideal speaker-hearer, in a completely homogeneous speech-community, who knows its language

perfectly" (Chomsky 1965: 3). Yet, the bulk of work is still concerned with the average speaker-hearer, which, though closer to psychological reality, nevertheless entails decontextualization because individual differences are obscured. While making generalizations about language constitutes the core business of linguistics, we must be aware that significant interspeaker differences exist, which, as I will argue in the following paragraph, has important consequences for usage-based models of language, and language change in particular.

Linguists (of various persuasions) have usually treated grammatical change as happening at the level of speech communities to a shared system of communicative conventions succinctly referred to as 'the language' of that community. However, these changes ultimately represent the cumulative effect of recurrent changes across a substantial set of individual language users whose innovative behavior reflects adjustments in the mental representation of their linguistic knowledge. In other words, conventionalization ('language change' rather than 'innovation') takes place when several such individual grammars are aligned during interaction. While this is often implicitly or explicitly acknowledged (e.g. Fischer 2010: 182; Traugott and Trousdale 2013: 46; Baxter and Croft 2016; Noël 2016), few studies of grammatical change have operationalized the notion of the "linguistic individual" (see Johnstone 1996). Admittedly, there is a large body of research within (historical) sociolinguistics that deals with interspeaker variation, social networks and the role of individual speakers in ongoing change (see Bergs 2005; Nevalainen et al. 2011; Raumolin-Brunberg and Nurmi 2011; Nevalainen 2015a, to name a few). For practical reasons, these studies are often limited to changes associated with high frequency elements, such as phonological change, and lexical or morphological change. Typical examples of the latter are replacement changes such as *thou* → *you* in the pronominal domain and the replacement of the third person singular ending *-th* → *-s* in verb conjugation. Intragenerational changes relating to syntactic constructions mostly stay out of the picture, yet their study may add significantly to our understanding of language change because—among other differences—syntactic patterns are less likely to be socially indexed (see Labov 2001: 28–29).

In keeping with the usage-based constructionist research program, the individual dimension is not only valuable for a social analysis of change, but also and perhaps especially, given the emphasis on it being a "psychologically plausible, generative theory of human language" (Hoffmann and Trousdale 2013a: 3), for a cognitive analysis of change. Analogy, for instance, a domain-general cognitive process (see Gentner et al. 2001; Itkonen 2005) that is recognized as one of the major mechanisms of language change (see De Smet and Fischer 2017 for an overview), strongly invites an individualist perspective, as it operates essentially at the micro-level of the individual mind: while the process itself may be largely subliminal, it is individuals who perceive similarities between linguistic elements, by virtue of

which they can abstract over concrete instances and align novel utterances with existing schemas. The same arguably holds for such usage-based notions as entrenchment, chunking and categorization. Given the natural connection between cognitive processes and the individual mind, it is surprising that usage-based corpus linguists in general, and diachronic construction grammarians in particular, have largely refrained from integrating the cognitive dimension into their studies (see also Noël 2016; Hilpert 2018). If we are serious about the cognitive commitment, research on language (change) as an abstract structure must be complemented by research on variation and change in the linguistic individual. As pointed out by Schmid and Mantlik (2015) and De Smet (2016b), variation in language use reflects differences in how language is cognitively represented. Therefore, "any patterns or tendencies found in this variation may reveal something about the organization of mental representation" (De Smet 2016b: 251), and, I would add, possibly also about the extent to which the adult mind can adapt to ongoing linguistic change.

Related to the focus on individuals are theoretical and methodological considerations of lifespan change. If we assume that individual mental grammars change, and if we find ways to attest and chart such changes, this could shed new light on the highly polarized debate on language change, emanating from two conflicting views on the fundamental nature of language acquisition and language change. Broadly speaking, research embedded in the generative tradition assumes the existence of a Universal Grammar, an initial state of the grammar, that is hard-wired in the brain and "passes through a series of states in early childhood, reaching a relatively stable steady state that undergoes little subsequent change, apart from the lexicon" (Chomsky 1995: 14). Proponents of this view typically consider children as the primary instigators of change (e.g. Lightfoot 1979; Clark and Roberts 1993; Henry 1997).

Conversely, usage-based/constructionist approaches attribute a central role to language use in both the acquisition process and in language change. Children are argued to construct their linguistic knowledge from the input and learn grammatical 'rules' by generalizing over item-specific instances (Tomasello 2003), or lack thereof (see statistical preemption, e.g. Boyd and Goldberg 2011), rather than analyzing that input in terms of predefined, innate categories. Linguistic change is considered to originate in speaker interaction (in line with sociolinguistic findings), which implies that it is not solely or primarily initiated by children (see Aitchison 2001: Ch. 14; Bybee 2010: Ch. 6; Traugott and Trousdale 2013: 21), in part because they do not actively participate in the social networks that propagate changes through a population. Bybee (2010: 116), referring to a study by Slobin (1997), furthermore argues that children might not have developed the skills to advance complex changes such as the development of epistemic meanings in grammaticalization: "The type of inferencing that is necessary for semantic change to proceed

in grammaticalization is something that children learn later in development". It follows that speakers may adopt novel constructions both in childhood and later in life, a view that is strongly opposed to the idea discussed earlier that a person's grammar is fixed by the time they become adults.

If the possibility of lifespan change is not precluded *a priori*, it will have to be established in which forms linguistic malleability past adolescence may manifest itself. Community-level descriptions of change have consistently shown that constructional environments are pivotal in facilitating the emergence and spread of novel patterns and features (e.g. De Smet 2013; Petré 2014). Constructional environments include the immediate patterns that a construction collocates with, but the term may also point to related constructions in a network, which may mutually influence each other if speakers pick up on their similarity. Applied to the lifespan of individual speakers, the question arises whether such environmental or network effects can also be attested at the level of the individual. In other words, do related constructions coevolve in individual usage? The present study aims to add to this discussion by tracking the use of the special passives across the adult lifespan. Longitudinal studies of this kind are still few and far between, for obvious reasons: the scarcity of resources that are suitable for the study of syntactic change combined with the individual lifespan approach has long prevented researchers from undertaking such studies (see Chapter 2 for a literature overview).

1.2 Research questions and methodology

The preceding discussion has highlighted several areas in which the study of individual speakers could inform theories of language change. Defined more precisely, the major goal of this work is to shed light on three fundamental questions:

1. How do variation and change at the individual level interact with change at the community level?
2. Is there evidence for constructional change in syntactic constructions past adolescence? If so, how closely do lifespan changes follow community trends?
3. Are related linguistic patterns (such as the special passives) associated in individual mental grammars? If so, do these constructions influence each other's development in individual usage?

To gain insight into the cognitive and social forces that drive linguistic change, the present study selected two interrelated linguistic constructions that undergo significant change in the history of English. In particular, this monograph concentrates on the prepositional passive (2), i.e. passive constructions whose subject corresponds to the nominal complement of a preposition in the active, and the nom-

inative and infinitive construction (3), a type of passive that features a perception, cognition or utterance verb (PCU verb) followed by a *to*-infinitival complement.

(2) Prepositional passive
[SBJ *be* V-*ed* (X) P]

a. *They were laughed at*.
b. *They are taken notice of*. [X=NP]
c. *They are cried out against*. [X=ADV]

(3) Nominative and infinitive
[SBJ *be* V_{PCU}-*ed to* V_{INF}]

a. *He is said to be a thief.* [utterance verb]
b. *He is assumed to be a thief.* [cognition verb]
c. *He was heard to say: "It wasn't me"*. [perception verb]

Both types of passives constitute innovations of the Middle English period, but become more firmly established in Early Modern English when they significantly increase in frequency and become more productive. The prepositional passive, for instance, expands to more complex entities such as phrasal-prepositional verbs (e.g. *cry out against*) and other multi-word expressions (e.g. *take notice of*) (Visser 1973), while the passive with infinitival complement starts to overtake its active counterpart in frequency (Dreschler 2015) and is found to be exploited as a marker of evidentiality (Noël 2008).

Recent work has connected the rise of these special passives with the increased need for topical or unmarked subjects after word order changes established SV(O) as the default sentence pattern (Los 2009; Dreschler 2015). Stricter syntactic requirements for the sentence-initial position meant that objects and adverbials carrying old information could no longer be used as unmarked linkers to the previous discourse (a feature of the Old English V2 system). Passivization presented itself as a convenient means to obtain a similar effect: a given object could be turned into an unmarked subject to sit in its preferred clause-initial linking position. This is corroborated by a general increase of the regular passive in Early Modern English (Seoane 2006). In brief, the expansion of the special passives in Early Modern English presents itself as an interesting case study to explore individual trajectories in language change against the backdrop of temporal language dynamics in the community as well as the sociocognitive mechanisms underlying these processes.

The intention to analyze the diachrony of linguistic constructions both at the micro-level of the individual mind and at the macro-level of the community poses significant methodological challenges. The most critical one is the lack of corpora

that systematically integrate these two dimensions. A major goal of the *Mind-Bending Grammars* research project (ERC H2020 639008; PI Peter Petré), of which the present study is a result, was to develop such a resource and make it available for other researchers interested in these questions. The result of this undertaking is the EMMA corpus (*Early Modern Multiloquent Authors*), which will be discussed in more detail in Chapter 5. In brief, the EMMA corpus is a large-scale specialized corpus (ca. 90 million words) that comprises the writings of a selection of 50 individuals across 5 generations of seventeenth-century authors. The set of criteria to be fulfilled by the prospective authors included, among other things, a long career with sufficient material across career stages (amounting to a minimum of 500,000 words per author), a demonstrable link with London, and social, political and stylistic connections within and across generations. EMMA comes with a rich metadata database (containing, among other things, social network information and mobility data collected from the authors' biographies) and a corpus query and annotation tool (see Manjavacas 2016; Manjavacas and Petré 2017), which was used for the retrieval and linguistic annotation of the special passives.

1.3 Outline

This introductory chapter is followed by eight chapters, which are divided into two main parts (Parts II-III) plus a concluding part (Part IV) that summarizes the findings and offers some directions for further research. Part II, consisting of Chapters 2 to 4, concentrates on theories of language change and the historical development of the special passives. This will provide the necessary theoretical and historical background to the analyses in Part III, which focus on the interplay between individual and communal aspects of change, as documented in the written production of the 50 EMMA authors, who hail from various interconnected communities of practice.

The opening chapter of Part II (Chapter 2) establishes a framework for the integration of individual-level knowledge into a comprehensive theory of grammar, that is, a theory that seeks to capture the properties that give rise to both dynamicity and stability in language. Chapter 3 elaborates on the rise of the passive in light of the historical changes English underwent, which involved the decline of the verb-second rule and the fixation of SVO word order. It provides the larger, systemic context in which the passive could expand to new construction types such as the NCI, the prepositional passive and the recipient passive. Chapter 4 will then zoom in on the individual histories of the prepositional passive and NCI construction, paying particular attention to the linguistic environments in which they arise. Chapter 3 and 4, in other words, concentrate on the aggregate developments that

have traditionally been the focus of language change research. They demonstrate, primarily from a language-internal perspective, why these cross-linguistically rare passives arose in English when they did and how their spread fits a larger picture of change.

Part III seeks to examine the role of individuals in communal change. It starts with a chapter (Chapter 5) on the design and compilation of the EMMA corpus as part of the *Mind-Bending Grammars* project, which constitutes the methodological answer to the desiderata laid out in Chapter 2. Chapters 6 and 7 present the results of the corpus studies in EMMA for the prepositional passive and the NCI, respectively. The main objective is to shed new light on the interaction between individual and communal aspects of constructional change (see question 1, Section 1.2). Additionally, these chapters will address the question of lifespan change (see question 2, Section 1.2). Chapter 8 compares the two constructions in order to explore whether related constructions (such as the special passives) are associated in individual usage (see question 3, Section 1.2), which offers novel insights into constructional taxonomies. Chapter 9 concludes this work by recapitulating the main arguments, discussing the implications for linguistic theory and identifying potential avenues for further research that could address some of the unresolved issues that the present research will inevitably open up.

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2 A theory of language change

2.1 Introduction

One of the most fundamental puzzles in linguistic theory is the question of how and why language changes. Important insights into the mechanisms of change have been put forward by various schools, yet several areas remain underexplored, which has led to a particular bias in historical linguistics. Most notably, research of the last few decades has treated linguistic change as happening to an abstract object 'language', that is, the focus has been on change in linguistic conventions. While making generalizations about language use is a valid and important objective in itself, we must be aware that changing conventions ultimately represent the effect of innumerable interactions between individuals speakers, whose linguistic knowledge is continually adjusted by processes of entrenchment. Failure to integrate the individual dimension of linguistic change is a missed opportunity not only to understand the workings of language change, but also of language use more generally. Studying individuals in their social contexts during the process of language change provides a unique window on the cognitive and social mechanisms that underlie the emergence of grammar. A comprehensive theory of language change must seek to capture both dimensions.

This chapter aims to make these ideas more explicit and is organized as follows. Section 2.2 lays out the requirements for a comprehensive model of language that can accommodate the interaction between unique and shared knowledge. It is argued that the variable yet structured nature of language can be modeled if language is conceived of as a complex adaptive system. Section 2.3 contends that cognitive construction grammar is well suited to examine language as a complex adaptive system, as it provides the proper methodological and theoretical tools to do so. At the same time, it is clear that this potential has not been realized in most constructionist research to date. In Section 2.4, I address this methodological gap by zooming in on individual and communal aspects of change. The aim is twofold: first, advancing our understanding of the interaction between these two systemic levels; and second, addressing the question of lifelong learning and lifespan change.

2.2 Desiderata

This chapter subscribes to the usage-based premise that a theory of language change is first and foremost a theory of language use (Larsen-Freeman 1997: 148;

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Fried 2013: 419). In linking diachronic change and synchronic variation, it aims to offer a panchronic perspective on language (see Weinreich et al. 1968; Heine et al. 1991: 261; Hickey 2010). Among theories that put usage center stage, two research traditions were particularly prominent in the second half of the twentieth century: historical sociolinguistics and grammaticalization theory. A brief discussion is provided in the first part of this section because these theories offer important insights for the approach taken in this book. It will also become clear, however, that they cannot function as a comprehensive theory of language change. These issues are discussed in the second part of this section. A major shortcoming is that the individual dimension is not (sufficiently) integrated. The final part of this section, then, lays out the desiderata for a model of language that is both psychologically plausible and unites its intrinsically variable yet systematic nature.

The landmark paper by Weinreich et al. (1968) and the book-length study by Romaine (1982) marked the onset of the subfield of linguistic inquiry that has come to be known as historical sociolinguistics. A major contribution of this early paper is the insight that structuredness is not to be equated with homogeneity; language, it is argued, whether examined synchronically or diachronically, must be viewed "as an object possessing orderly heterogeneity", that is, structured variation (Weinreich et al. 1968: 100). A fundamental construct of this theory is the linguistic variable: "alternate ways of saying 'the same' thing" (Labov 1972: 188). Importantly, these linguistic alternatives carry social significance, that is, their values are stratified across groups of socio-economic class, gender, age, and/or etnicity. Since the work of Milroy and Milroy (1985), social network relations gained importance and later still variation is associated with "conscious or unconscious acts of social identity" (Auer et al. 2015: 9), which emphasizes that "variation does not simply reflect, but also constructs, social meaning" (Eckert 2012: 87). Language change is conceived of as "the inevitable by-product of linguistic interaction" (Weinreich et al. 1968: 150), a continuous process of alternating linguistic and social change: it sets in when a variant spreads through a subgroup of the speech community and becomes indexical of that group; it can then spread to other linguistic contexts until new groups arrive that reinterpret the ongoing change and thereby enable new changes (Weinreich et al. 1968: 186–187). The competition of variants is key.

The foundations for grammaticalization theory were laid in a series of seminal studies published toward the end of the twentieth century (most notably, Heine et al. 1991; Traugott and Heine 1991; Hopper and Traugott 1993; Lehmann 1995). Broadly speaking, grammaticalization theory is concerned with the development of grammatical functions from lexical expressions and examines the various processes that affect the functional and formal aspects of grammaticalizing expressions. The grammaticalization criteria offered by various strands of research within this paradigm have emphasized different aspects of change. Two major

views have crystallized over the years: one that typifies grammaticalization as *reduction* and another that views it as *expansion* (Traugott 2010; Traugott and Trousdale 2013; Coussé et al. 2018; Cuyckens 2018). The former approach characterizes grammaticalization as bringing about a reduction in the autonomy of a sign (see Lehmann's (1995) parameters of grammaticalization and such notions as phonological attrition, semantic bleaching and decategoralization). The latter approach highlights structural and semantic-pragmatic expansion and has been most clearly articulated by Himmelmann (2004). Common to both vantage points, however, is the gradualness of change, which hinges on small-scale, local changes. Another crucial point is that old and new meanings or forms may coexist at a given moment in time. For example, while *be going to* V in Present-Day English is an established future marker, particular instances may still represent the older use of physically going somewhere with the intention to V; similarly, the construction with the contracted form *gonna* is found alongside the full form. This phenomenon is known as layering (see Hopper 1991). Overall, grammaticalization studies have provided the historical linguist with a wide range of tools to describe a variety of language-internal[1] processes involved in the emergence of grammar.

Over the past decades, historical sociolinguistics and grammaticalization theory have significantly advanced our understanding of language change. The core insight, implicit in both approaches but arrived at differently, is that diachronic change and synchronic variation are inherently related (see Weinreich et al. (1968) for historical sociolinguistics and Heine et al. (1991: 258–261) for grammaticalization theory). Historical sociolinguistics has focused on the competition of two (or more) linguistic variants, whereas grammaticalization theory accommodates the coexistence of constructions with varying degrees of grammaticalization at a given point in time. A similar analogy links synchronic gradience and diachronic gradualness.

In both cases, the models are particularly suited for specific types or aspects of change. Historical sociolinguistics has strong explanatory force when it comes to the propagation of change, which has often been modeled as an S-shaped adopter distribution, that is, a slow-quick-slow trajectory (e.g. Kroch 1989; Labov 1994; Chambers 2002; Nevalainen and Raumolin-Brunberg 2017).[2] S-curves typically follow the evolution of some kind of proportion across time, for instance the proportion of relevant instances that have succumbed to the innovation or the

1 While language-external mechanisms have traditionally received less attention in the grammaticalization literature, Heine and Kuteva's (2003, 2005) model of contact-induced grammaticalization has put them firmly on the research agenda.

2 See Blythe and Croft (2012: 279–280) for an overview of linguistic changes that have been approximated by an S-curve in the literature.

proportion of speakers adopting the incoming variant. Such a percentage scale works well when there is a binary choice between the old and new variant, e.g. pronominal *thou/you*, third-person singular suffix *-th/-s*, (ir)regularization of tense marking in pairs like *dived/dove*, [hw]/[w] variation in words like *which* and *whine* in Canadian English (see Nevalainen and Raumolin-Brunberg 2017; Chambers 2002). Accordingly, S-curves have been used to approximate the trajectories of so-called "replacement changes" (Blythe and Croft 2012: 278) with much empirical success. The approach is ill-suited, however, when there are no two competitors or an otherwise well-delineated set of expressions for 'saying the same thing'. For example, with regard to the prepositional passive, Denison (2003: 66) wonders:

> If [the prepositional passive as in *Fran will be frowned at*] was an innovation, what did it replace? An active with the indefinite pronoun *man* or *me* as subject? That is indeed a close equivalent in function to the passive, but it wasn't the only one, and after the fifteenth century it was no longer in contention, yet the prepositional passive continued to spread.

The innovation and propagation of the prepositional passive is but one example where linguistic change is not the outcome of two expressions competing for the same function. Arguably, most changes in language do not fit the stringent variationist model of change, which requires researchers to "fin[d] a good linguistic variable" (Tagliamonte 2006: 83), i.e. forms that are (i) functionally equivalent or near equivalent and (ii) correlated with social factors (see supra and Tagliamonte 2006: Ch. 5). This creates an imbalance regarding the phenomena that are studied. For instance, abstract linguistic structure such as syntactic phenomena are less likely to be socially indexed (Labov and Harris 1986: 21; Labov 2001: 28–29), and have therefore received little attention. Another criticism is that historical sociolinguistics has failed to provide a satisfying account of innovation, i.e. how the specific variants that are central to their studies arise; most of the time, their existence is simply presupposed, or introduced by contact (see the discussion in Croft 2000: 54–55). It is clear, then, that despite its merits the sociolinguistic model of change is too confined to present a comprehensive model of change. The same holds for grammaticalization theory, which naturally has explicitly targeted a specific set of changes (roughly, from lexical to grammatical or from grammatical to more grammatical) and has primarily been concerned with the emergence of grammatical structure.

Another bias, apparent in historical sociolinguistics and grammaticalization theory, but in other subdisciples as well, is the negligence of the individual dimension. As Sapir (1921: 246) has pointed out, our collective ways of expression reflect "thousands upon thousands of individual intuitions". Speaking about language and language change in abstract terms easily detracts from the fact that it is not a

unified phenomenon. If we say that language is emergent, so is language change: changes to linguistic conventions can only come to the surface if a critical number of speakers in a given community adjust their use of that convention. To fully understand the nature of language change, it will be beneficial to investigate to what extent community-level changes are reflected in individual speakers.

In grammaticalization theory, the reality of individual grammars is not contested but has not been thematized either, in part because grammaticalization is viewed as an epiphenomenon bearing solely on what Sommerer (2018: 274) calls the "speaker-external" dimension. Sommerer (2018: 274) goes on to say that "[w]hereas a system can undergo some re-interpretation in time with elements grammaticalizing, the individual speaker generally does not actively 'grammaticalize' things". Raumolin-Brunberg and Nurmi (2011: 262) are much more cautious to exclude the possibility of grammaticalization in the individual, but state that it is generally difficult to observe grammatical change across the lifespan because the processes involved in grammaticalization tend to be slow. They add that large-scale longitudinal data would make it possible to explore this question in more detail. Recent studies on grammaticalization in individual speakers, which draw on such large datasets, have indicated that Sommerer's statement indeed calls for qualification (see e.g. Petré and Van de Velde 2018; Anthonissen and Petré 2019). Beyond the concept of grammaticalization *per se*, it is generally implied that particular processes involved in grammaticalization originate in the minds of individuals (e.g. reanalysis, analogy, inferencing). In other words, grammaticalization theory is not incompatible with the assumption that language change is both a cognitive and social phenomenon, but the distinction and interaction between individual and community grammars has not often been made explicit, let alone systematized.

Sociolinguists have periodically explored how individual variation relates to sociolinguistic structure, a question already voiced in an early paper by Guy (1980) and taken up in more recent work (e.g. Meyerhoff and Klaere 2017). Some other recent papers have also specifically expressed the need for investigating cognitive factors (e.g. Tamminga et al. 2016; MacKenzie 2019). Such undertakings are at odds with traditional work in (historical) sociolinguistics, which has repeatedly declared the primacy of the community over the individual (e.g. Weinreich et al. 1968; Labov 2006, 2012; Eckert 2019). For instance, in his influential work on the social stratification of English in New York city, Labov (2006: 5) states: "Language [...] is an abstract pattern, exterior to the individual. In fact, it can be argued that the individual does not exist as a linguistic entity." Acknowledging that the prerequisite of change must be innovation by individual speakers, the Milroys follow a more moderate course (Milroy and Milroy 1985: 345; Milroy 1992: 77). Idiolectal aspects have also become more visible in third-wave sociolinguistics, where language users are no longer viewed as passive adopters of the community

standards, but as social agents, who actively construct social identities (Eckert 2012; Auer et al. 2015). Even though stylistic practice now figures prominently in sociolinguistic theory, the primary focus is still on social embeddedness, i.e. the way speakers construct their *social* identities. Individuals are not an object of interest in themselves except as interactors in a speech community, defined by their social histories and memberships (e.g. the density of their social networks, mobility, age cohort, community of practice).

A comprehensive framework for understanding language acknowledges that language is both a cognitive and social phenomenon and seeks to do justice to both dimensions. A central question then is how such a theory can best model the linguistic relations between grammars as grounded in individuals' experiences, and grammar (singular) as an alignment phenomenon in the community flow. This question entails three desiderata for a theory of grammar. First, it should be able to accommodate the uniqueness of individual grammars. Secondly, while variation is pervasive, cognition, social embedding and experiences are also to a large extent shared between humans. The ensuing systematicity of grammar must equally be accounted for. In particular, a theory of language must seek to uncover how variation is structured and how community grammar emerges as a macro-phenomenon, which is not the mere sum of individual parts. A third objective is to model the relations between the individual and the community, that is, to clarify how unique and shared knowledge are dynamically related. In doing so, this theory of language seeks to capture and reconcile the properties that give rise to both dynamicity and stability in language.

Recent approaches that aim to factor in the intrinsically variable yet systematic nature of language commonly refer to language as a "complex adaptive system" (Steels 2000; Beckner et al. 2009; Bybee 2010; Ellis 2011; Van de Velde 2014; Beuls and van Trijp 2016; Schmid 2020).[3] Such a system is characterized by the following key features:

(1) a. The system consists of multiple agents (the speakers in the speech community) interacting with one another.
    b. The system is adaptive; that is, the speakers' behavior is based on their past interactions, and current and past interactions together feed forward into future behavior.
    c. A speaker's behavior is the consequence of competing factors ranging from perceptual mechanisms to social motivations.

3 See Holland 1992 for other types of complex adaptive systems in human behavior.

d. The structures of language emerge from interrelated patterns of experience, social interaction, and cognitive processes.
(Beckner et al. 2009: 2)

A view of language as a complex adaptive system requires a framework that offers both the methodological tools and theoretical concepts to analyze the various components of the system. While every theory of language covers grammar's systemic aspects (i.e. linguistic 'rules' or 'conventions'), few theories explicitly address the vast linguistic diversity that follows from the interaction of non-static entities. That is, dynamicity does not only lie in the interaction of agents (1a), but also in the agents themselves, as their grammars are continuously reshaped by experience and therefore inherently dynamic and non-identical between experiential phases (1b)–(1c).

Assumptions on the dynamicity of the agents themselves cannot readily be accommodated within theories of grammar that rely on idealized speaker-hearer communities such as those of generative grammar. In such models, linguistic knowledge, or at least an 'initial state' of it, is hard-wired in the brain (Chomsky 1965: 3) as a kind of 'language organ' (Paikeday 1985), relegating variable input to the realm of superficial noise (Berwick and Chomsky 2016). Sociolinguistics, by contrast, departs from the idea of idealized speakers and embraces the reality of inter- (and intra-)speaker variation. As pointed out above, this variation is argued to be socially motivated. In other words, sociolinguistics has tried to establish how variation is constrained by delineating groups of people that are more likely to share linguistic conventions. Variation resulting from individual differences in cognition (e.g. different cognitive routines or abilities) is not usually addressed (but see some recent work, e.g. Tamminga et al. 2016; MacKenzie 2019). In Section 2.3, I will argue that construction grammar offers a descriptive framework that is naturally compatible with the premises of language as a complex adaptive system.

2.3 Construction grammar

It has been argued thus far that a comprehensive and psychologically plausible theory of language—and by extension language change—needs to pay more attention to individual differences between language users than is typically done. In this section, I would like to argue that cognitive construction grammar is a suitable framework to do so, but has so far insufficiently embraced this opportunity. I will use the terms 'construction grammar' and 'constructionist' to refer to the family of cognitive, usage-based strands of construction grammar; for a comparison with

other formalisms such as Sign-Based CxG, Fluid CxG and Embodied CxG, see Ziem and Lasch (2013) and Hoffmann and Trousdale (2013b).

Cognitive construction grammar (Goldberg 1995, 2006a; see Boas 2013 and Ziem and Lasch 2013 for overviews; see also the closely related framework in Croft 2001) has been claimed to agree well with the premises of language as a complex adaptive system (Beckner et al. 2009; Ellis 2011; Croft 2014) and its adherents have explicitly aspired to psychological plausibility (Tomasello 2003; Allen et al. 2012; Boas 2013; Hoffmann and Trousdale 2013a; Pulvermüller et al. 2013). In practice, however, constructionist approaches have not fully embraced the individual dimension of this premise. This holds true especially for diachronic analyses, where construction grammar predominantly serves as a descriptive framework for exploring the structural properties of linguistic change, while the cognitive commitment that a constructionist approach entails is lacking or left implicit (see Noël 2016; Hilpert 2018). In fact, few studies outside acquisition research[4] have explicitly tried to make systematic observations about features of individual speakers' grammars, or how their interaction leads to a community grammar as an emergent macro-phenomenon.

From a constructionist perspective, individual constructional networks presumably contain rich contextual information, keeping track which use of which construction is appropriate in which context (called the "sociolinguistic monitor" by Labov (2012: 266)). People have been shown to switch smoothly between communities of practice, using different types of language. The role of communities of practice or text types would appear to be of great relevance to corpus-based studies of individual behavior within a constructionist framework. Yet sociolinguistic concepts have received relatively little attention in construction grammar, although there have been some attempts to integrate them (e.g. Kristiansen and Dirven 2008; Croft 2009; Harder 2010; Hollmann 2013; Hilpert 2017b; see also Hoffmann and Bergs 2018 specifically on genre as a sociocognitive construct). To adequately assess what it means to share constructional properties with peers, it is essential to take the richness of an individual's context into account whenever possible.

In general, then, patterns of individual language use have hardly been an object of interest in themselves, and their interaction with communal patterns remains underexplored. Sections 2.3.1 and 2.3.2 highlight the main areas of opportunity for

4 Individual differences in competence have received much attention in research on language acquisition and processing (e.g. Schmidt 2012; Dörnyei 2014; Dąbrowska 2015; Kidd et al. 2018; Dąbrowska and Andringa 2019) and multilingualism (e.g. Michael and Gollan 2005; Hulstijn 2015; Nichols 2017; de Bruin 2019).

a more comprehensive constructionist research paradigm that is sensitive to, and exploits insights from, individual differences in language use.

2.3.1 Theory

As a theoretical model of language, construction grammar is well equipped to describe the dynamics of a complex adaptive system. I will concentrate on two key features of construction grammar that hold great promise to help integrate the oft-neglected individual dimension: (i) usage-based storage; (ii) linguistic knowledge as a network.

Usage-based storage: Cognitive construction grammar is committed to a usage-based model of language (see Langacker 1988; Barlow and Kemmer 2000; Tomasello 2003; Bybee 2010, 2013), which understands "grammar [...] as the cognitive organization of one's experience with language" (Bybee 2013: 49). Storage of linguistic (and other types of) knowledge proceeds by means of recurrent feature learning from exemplars, leading to fluid categories and variable constraints. While early constructionist approaches concentrated on idiosyncrasies of form-meaning pairings (Fillmore et al. 1988; Goldberg 1995), even fully compositional sequences are now considered constructions if they are sufficiently frequent (Goldberg 2006a: 5). This shift ties in with construction grammar's increased usage-based orientation, where constructions can be understood as "processing units or chunks—sequences of words (or morphemes) that have been used often enough to be accessed together" (Bybee 2013: 51). With gradience, variation and dynamicity as core design principles of language, construction grammar, and usage-based linguistics more generally, radically depart from the concept of the idealized language user (see Chomsky 1965: 3). Since no-one's input is identical (Dąbrowska 2012), and in addition people display a set of different cognitive styles of processing information (Jonassen and Grabowski 2011 [1993]), no two people share the exact same grammar.[5] Yet neither are their grammars unrelated: variation is constrained. This aspect may be covered by the network architecture of cognitive construction grammar.

Network architecture: Linguistic information is assumed to be stored in the mind as a hierarchical and dynamic associative network, consisting of nodes (constructions) and links between them (Goldberg 1995). While constructions (pairings

5 The state of the individual network is impacted by a wide range of features, including age, personality, experience, education, socio-economic status, attitudes, cognitive abilities, etc. (see e.g. Mills and Hemsley 1976; Ginsborg 2006; Street and Dąbrowska 2010, 2014; Pakulak and Neville 2010).

of form and meaning) are considered the basic building blocks of language, their ontological status is not unique: "knowledge of language is knowledge" (Goldberg 1995: 5). Accordingly, and in line with construction grammar's usage-based bearings, nodes are constructed by means of general cognitive abilities, such as categorization (Croft 2001: 27; Goldberg 2006b; Langacker 2006). When a speaker is exposed to a series of linguistic utterances with formal and semantic commonalities, she may, at one point, categorize these utterances as instances of the same construction, thereby creating a node in her associative network. This node is not only dynamically created, it remains a dynamic entity that may be strengthened or weakened by experience as usage feeds into the existing representations. Similarly, links between nodes are subject to change.

Constructional nodes are organized according to taxonomic hierarchies: lower-level constructions inherit properties from higher-level constructions (broader generalizations) and features from lower-level nodes percolate upward. Inheritance relations capture information about the nature of the connection between nodes; Goldberg (1995: 74–81) discerns four types: polysemy links, subpart links, instance links and metaphorical extension links. Consider the following situation. Gibbs (2007: 19–20) recalls a pub conversation where a late arrival asks whether Nicole is still there. One of the people present answers that "she left about two beers ago". This utterance is remarkable, as the phrase *two beers ago* is not a conventionalized way of indicating time. Yet everyone readily understood its meaning. From a constructionist point of view, one could argue that the phrase instantiates the [Quantifier + NP + *ago*] construction, which refers to the period of time elapsed between the moment of utterance and a moment in the past. The NP slot is typically filled with a noun relating to time (*years*, *hours*, *time*, *while*, etc.), yet in this case, the NP does not itself express time but rather inherits this schematic meaning from the higher-order generalization, while pragmatic and contextual knowledge (the time it takes to drink two beers) ensures that beer and time can be metonymically related.

Horizontal links have generally received much less attention in construction grammar, although this is changing (see Sommerer and Smirnova 2020). In a recent paper, Van de Velde (2014: 141) introduces the biological notion of degeneracy—"the phenomenon that structurally different elements can fulfil the same function"—to clarify the status of horizontal links in constructional networks. He argues that "languages, as complex adaptive systems, do not rely on a sole strategy to express abstract syntactic-semantic meaning. Horizontal relations between constructions (V1-V2-Vn; NOM-ACC, DAT-GEN …; integrated vs. non-integrated subordination) express semantic distinctions that are (partly) expressed by other means as well" (Van de Velde 2014: 172). Importantly, while degeneracy introduces redundancy into the system, it is not to be equated with it. Degeneracy is therefore

still compatible with the idea that grammatical forms carry meaning (Langacker 2008b: 3) and that no two forms express the exact same meaning (see Bolinger 1968; Goldberg 1995; Croft 2001), yet it highlights that language users have at their disposal a large set of coding options, some of which may convey highly similar semantic-pragmatic meanings. Also, a particular form may appear in different places in the network, performing slightly different functions (e.g. V1 marks interrogative illocutionary force, but also conditionality, among other things) (Van de Velde 2014: 173). In this respect, degeneracy fits well with the idea of interindividual variation: each utterance marks a communicative choice on the part of the speaker. The possibility of substantial overlap and communicative efficiency, however, is not lost: people's linguistic choices may be different, but not all too different.[6]

More precisely, the concept of a constructional network also emphasizes that interindividual variation is constrained, as it is governed by regular processes (associations based on similarity), and deviation from the common ground is expected to occur systematically, along lines of recurrent network associations. De Smet (2016a), for instance, argues that the likelihood of a constructional innovation is determined by the entrenchment of analogous patterns, which is illustrated by means of the development of adjectival uses of the noun *key*. In the population at large, the extension of *key* proceeds in three main stages. A first modification toward unmistakably adjectival uses (2c) is the increasing productivity of *key* in noun-noun compounds (2a). Next, *key* started to appear in contexts typically associated with adjectives (2b), which in turn facilitated the extension to uses that are exclusively adjectival, e.g. the predicative use of *key* in (2c).

(2) a. *The proposed wording of the possible agreement was given to Dr. Adenauer with certain **key** phrases in blank.*
b. […] *access to most of the **key** official documents in the Sandline affair.*
c. *When he elaborated on those special circumstances, one seemed to be **key**.*
(De Smet 2016a: 88)

This model of change predicts that the same principles should constrain individual usage, a prediction that is largely borne out by the individual-level data gathered from the Hansard Corpus. More specifically, De Smet shows that individuals who

6 In fact, redundancy is in part a safeguard against individual differences because if a hearer does not know a particular construction, she will usually be able to reconstruct the meaning thanks to redundant coding in the utterance (see also Dąbrowska 2020 on the multicollinearity of linguistic features).

use predicative *key* also generally have attributive *key*, but not vice versa. This holds even after predicative *key* has become quite common in the community. De Smet concludes that the individual cognitive language system has to be 'ready' before it can adopt an innovation, regardless of whether that innovation has already conventionalized. Put differently, a node *b* has to exist in the network to link node *a* to a hypothetical, farther removed node *c* (see also Geeraerts 1997).

By relying on usage-based storage and the idea of a constructional network, cognitive construction grammar is more robustly equipped to deal with variation than a modular system with linking rules. Variation is not noise, it is anticipated; one might even argue variation is a fundamental design principle.

2.3.2 Methods

Construction grammar has been characterized as "one of the methodologically most pluralistic fields" (Gries 2013: 94). While foundational work in cognitive linguistics and construction grammar relied quite heavily on introspection, it did not take long before the field started adopting a more diverse methodological toolkit that is grounded in actual usage, as found off-line in the form of spontaneously produced corpus data or as elicited in an on-line experimental setting. Corpus data are used to examine language in its natural habitat, providing (a) valuable descriptive insights into the system as is (or was), or (b), a testing ground for specific hypotheses. Experimental design allows us to control for a variety of factors and is helpful in answering specific research questions or in eliciting speakers' behavior in hypothetical situations. A variety of methods are used to obtain and study observational and experimental data, overviews of which can be found in Ziem and Lasch (2013: 67–76) and Gries (2013). Despite the ongoing debate on the suitability of said approaches (see Arppe et al. 2010), the current consensus seems to be that "the empirical methodology of usage-based linguistics [has] a helix-like structure, involving a gradual refinement of interpretations through a repeated confrontation with empirical data – all kinds of data" (Tummers et al. 2005: 233). By advocating the use of interdisciplinary and corroborating evidence, construction grammar aims to strengthen the cognitive plausibility of the models it proposes. Its pluralistic methodological outlook also fits well with the idea of language as a complex adaptive system, the study of which is arguably not well served by a one-size-fits-all approach. While the field has turned to more sophisticated methods over the years, there are still some unresolved issues. I would like to briefly discuss a number of challenges that are particularly relevant for the work presented in this book.

One aspect that has been missing in construction grammar's empirical endeavor is a systematic integration of the individual dimension. This is not to say that no steps have yet been taken to account for individual differences. In psycholinguistics, for instance, it is standard practice to control for items *and* subjects (i.e. individual speakers) in a by-item and by-subject design (see Baayen 2008 for some examples). Mixed-effects regression modeling, which offers a sophisticated way of dealing with individual variation and has been advocated for its precision and predictive power, has also found its way into a variety of linguistic disciplines. What these techniques share, however, is that they are not (typically) employed to *study* individual variation, but to filter it out as a source of noise. They also often involve practical issues, most notably data sparsity, which might restrain the researcher in fitting a model that would be theoretically desirable (e.g. a model with a random intercept *and* slope per subject) or, more generally, might steer him or her toward the study of phenomena that can be modeled more easily with current statistical techniques. Hence, the corpus-linguistic analyses that use the most advanced statistical methods tend to focus on alternations (binary response variables). This concern is also raised by Dylan Glynn in a discussion paper on methodology in cognitive corpus linguistics (Arppe et al. 2010: 12): "Our focus on alternations is the result of theoretical heritage from generative syntax and a matter of methodological convenience. Most linguistic decisions that speakers make are more complex than binary choices." In Chapter 8, I present an example of how mixed-effects models can be used to gain insight into individual variation rather than merely control for it.

A second challenge concerns the psychological reality of corpus data, i.e. the link between corpus and cognition, which continues to lead to heated debates. Newmeyer (2003: 695), for instance, has categorically denied that "corpus-derived statistical information is relevant to the nature of the grammar of any individual speaker" (see also Newmeyer 2019). The gist of his critique is captured in the following quote.

> Let us consider some arguments against stochastic grammars as models of linguistic competence. In every proposal that I am aware of, the probabilities that one finds in these models are drawn from corpora. One corpus that is widely applied is derived from the New York Times. But no child learns English by being read to from the Times! Another is the 'Switchboard Corpus', a database of spontaneous telephone conversations by over five hundred American English speakers (Dick & Elman 2001). The Switchboard Corpus explicitly encompasses conversations from a wide variety of speech communities. But how could usage facts from a speech community to which one does not belong have any relevance whatsoever to the nature of one's grammar? There is no way that one can draw conclusions about the grammar of an individual from usage facts about communities, particularly communities from which the individual receives no speech input. (Newmeyer 2003: 696)

While Newmeyer raises some pertinent concerns, there is no reason the corpus-linguistic enterprise should be abandoned altogether. A growing body of research shows that corpus-derived statistics, e.g. about the probability of grammatical variants or prototypicality of their instances (see e.g. Gries 2003; Bresnan 2007; Bresnan and Ford 2010), the frequency or idiomaticity of linguistic elements (see e.g. Balota et al. 2001; Wulff 2009; Caldwell-Harris et al. 2012), or degrees of association between constructions (see e.g. Gries et al. 2005; Wiechmann 2008), match speakers' intuitions or behavior as elicited or probed in experimental settings. Nevertheless, the exact cognitive correlates of frequency remain a point of debate, also in usage-based approaches (see Arppe et al. 2010; Schmid 2010, 2020; Blumenthal-Dramé 2012; Schmid and Küchenhoff 2013; Divjak and Caldwell-Harris 2015; Dąbrowska 2016; Stefanowitsch and Flach 2017), which generally acknowledge the shortcomings that Newmeyer criticizes, but are more nuanced in their judgment.

A legitimate concern that many of these authors raise is that corpus-based generalizations do not permit strong inferences about the linguistic knowledge of individual speakers. Blumenthal-Dramé (2012: 205), for instance, concludes that "statistical methods that aggregate over large corpora can only reveal generalizations pertaining to the knowledge of an idealized average language user, which may be rather weakly representative of actual brains", that is, they measure degrees of conventionalization—social processes—rather than the cognitive processes denoted by the term 'entrenchment' (see Schmid 2010: 116–117). It is therefore useful to distinguish between the "corpus-as-input" and "corpus-as-output view" (Stefanowitsch and Flach 2017; see also Schmid 2020), which forces us to be more explicit about the theoretical implications of corpus research. The former view holds that a balanced, generic-purpose corpus (ideally from a well-defined speech community) resembles the kind of input an average speaker in this community can be expected to be exposed to. It stands to reason that the New York Times corpus, which Newmeyer mentions, is not a good proxy for the kind of input a child receives; that is, the study of language acquisition is better served by a corpus such as CHILDES which reflects the way children learn language, i.e. in natural interaction with caregivers. The linguistic experience adults accumulate throughout their lives is much broader, and includes but is obviously not restricted to reading the news (see also Lemmens 2019).

The second view, "corpus-as-output", is probably the most prevalent one in practice, and stipulates that a corpus provides a snapshot of the linguistic performance of the average speaker in a particular community, which, according to Stefanowitsch and Flach (2017: 103), and many others with them, reveals something about the mental representations members of that community entertain. The latter claim is problematic because aggregated data may obscure vast indi-

vidual differences in cognition.[7] A more 'direct' approach to entrenchment, which mitigates the tricky shortcut between aggregated corpus data and cognition, is the use of idiolect corpora, which has also recently been advocated in a series of usage-based studies (see e.g. Barlow 2013; Schmid and Mantlik 2015; De Smet 2016a,b, 2020; Noël 2016; Petré 2016, 2017; Vetchinnikova 2017; Petré and Van de Velde 2018; Schmid 2020). The use of individual corpora is of course not new (see e.g. the use of ego-documents in historical sociolinguistics), yet, as elaborated in Petré et al. (2019), existing resources show clear limitations.

This calls for a more systematic approach, which even Newmeyer appears to subscribe to in one of his latest articles. "What we need", he writes, "are decent-sized corpora of the linguistic behaviour of particular individuals, or at least of individuals in a particular speech community, narrowly-defined. Do they exist? I do not think so. Until they do, for this reason alone, introspective judgments are irreplaceable" (Newmeyer 2019: §70). This is exactly what the *Mind-Bending Grammars* team has tried to achieve with the compilation of the EMMA corpus, which comprises the writings of 50 carefully selected authors across 5 generations, the majority of them London-based intellectuals, who are connected within and across generations through their religious, political and professional circles. As such, EMMA offers the much-needed resource for studying the real-time dynamics of individual and communal aspects of language use and language change. Chapter 5 describes the EMMA corpus in more detail (see also Petré et al. 2019).

2.3.3 Interim summary

In brief, Section 2.3 set out to demonstrate why cognitive construction grammar is a suitable framework for the integration of the individual dimension, highlighting theoretical as well as methodological opportunities and challenges. It was argued that a more systematic approach is called for, which facilitates the empirical analysis of individual differences and their relation to the community grammar. Such an approach stipulates that a crucial distinction is made between entrenchment (cognitive processes) and conventionalization (social processes), on which see

7 Seeing that individuals also differ in terms of linguistic experience, a similar concern may be raised with regard to the "corpus-as-input" view. It is, however, far from trivial to construct a corpus on the basis of an actual speaker's experience with language (see Roy et al. 2006), especially beyond first language acquisition. For that reason, the aggregation across a variety of speakers within the same community is in fact a desirable feature because it typifies the fact that speakers receive input from various speakers; if the corpus is representative of a particular community, it may thus serve as a valid proxy for what is conventionalized in that community and for the kind of input the typical member can be supposed to have been exposed to.

more below. As a preview to Chapter 5, I introduced the EMMA corpus, which implements the desiderata outlined in this chapter. While the use of corpora is not without problems (but neither is experimental research nor introspection), EMMA offers a novel resource that can play an important role in the empirical endeavor of the field, which to date has insufficiently embraced the individual dimension. In Section 2.4, I redirect the focus to language change, reviewing recent work on individual and communal aspects of change, which offer important insights against which the findings in this book should be interpreted.

2.4 Individual and communal aspects of change

This section reviews recent theoretical advances and empirical findings that are relevant to the objectives of this study, i.e. advancing our understanding of the interaction between the individual and the community, and, related to this, the extent of lifespan change or linguistic malleability beyond first language acquisition. I will first introduce the Entrenchment-and-Conventionalization Model (Schmid 2015, 2020), which elaborates the view that language is a complex adaptive system (see Beckner et al. 2009 supra) and offers a framework for exploring how experience, cognition and social interaction interrelate (Section 2.4.1). Among other things, this model holds that experience with language continues to impact speakers' mental organization of linguistic knowledge. Section 2.4.2 explores this idea in more detail by discussing the sociocognitive underpinnings of lifespan change and relevant linguistic findings. In the spirit of cross-disciplinary validation, that is, the "commitment to make one's account of human language accord with what is generally known about the mind and the brain, from other disciplines as well as our own" (Lakoff 1990: 40), this section is informed by studies from a wide range of disciplines in the cognitive sciences, including psychology and neuroscience.

2.4.1 Entrenchment and conventionalization

Drawing on the position paper by the 'Five Graces Group' (Beckner et al. 2009), Section 2.2 listed the main properties that characterize language as a complex adaptive system. Within the family of usage-based and constructionist approaches, the most detailed elaboration of the principles and processes involved is Schmid's (2020) Entrenchment-and-Conventionalization Model (EC-Model), a blueprint of which appeared in 2015 (Schmid 2015). This model serves as a major source of inspiration for studying the effects of cognitive and social processes in language change. Implementing the idea of language as a complex adaptive system, this model sup-

ports and gives substance to the view that the same mechanisms, grounded in domain-general cognition and social behavior, explain not only the systemic nature of language, but also its variable properties and inherent potential for change. In what follows, I will summarize the main ideas of Schmid's (2020) study, emphasizing those aspects that are particularly relevant for the studies in this book. Evidently, this brief overview cannot do full justice to the book-length discussion of the EC-Model found in Schmid (2020), but it will give a first glimpse into the complexities that are involved.

The EC-Model, as shown in Figure 2.1, consists of three main components: usage, entrenchment (cognitive processes shaping linguistic knowledge in individual speakers) and conventionalization (social processes shaping linguistic conventions in a speech community). At the center of this model of language are usage events, which set into motion the cycles of conventionalization and entrenchment. The feedback loops symbolize how conventions and individual linguistic knowledge are established and sustained by virtue of repetition in communicative acts, and mutually influence each other: "If usage events are repeated in identical or similar ways, as is indicated by the bundle of black circles in the middle, the recurrent aspects become conventionalized as utterance types such as words or patterns in the community and as entrenched patterns of associations in the minds of individual speakers" (Schmid 2020: 4). Conventionalization and entrenchment are in turn conducive to repeated usage because with increasing conventionalization comes greater potential to license usage events in the speech community and increasing entrenchment facilitates activation in individual speakers. This underscores the importance of repetition in virtually all aspects of language (see also Diessel 2007 for an overview). Schmid (2020: 15) also emphasizes that all facets of usage events—this includes the utterance itself as it is physically produced and perceived, but also the communicative goals of the interlocutors, the cognitive and interper-

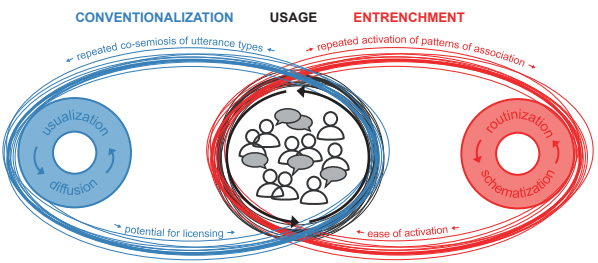

Fig. 2.1: The EC-Model (adapted from Schmid 2020: 4; reprinted from Anthonissen 2020a: 312, Fig. 1)

sonal activities involved and the linguistic, situational and social context—can become conventionalized and entrenched.

Note that the quoted sentence in the preceding paragraph distinguishes between 'utterance types' and 'patterns of associations', the former referring to linguistic conventions, which serve as implicit and explicit norms in the speech community, and the latter to individual mental representations. There are two main reasons why Schmid (2020: 27–28) avoids the notion 'construction' despite the general compatibility of the EC-Model with the constructionist approach. First, the term 'construction' has been used in the past to refer to conventions as well as stored patterns in the minds of individuals. This kind of underdeterminedness is undesirable when delineating the distinctive processes that the EC-Model involves. Second, Schmid (2020: 27) is concerned that the definition of a construction as a pairing of form and meaning is suggestive of "fairly neat one-to-one correspondences between forms and meanings", which is reinforced by the practice of representing them as nodes in a constructional network.

However, as Schmid also points out, several leading construction grammarians are explicit about the contingent properties that the notion entails. Goldberg (2019: 7), for instance, defines constructions in her most recent monograph as "emergent clusters of lossy memory traces that are aligned within our high- (hyper!) dimensional conceptual space on the basis of shared form, function, and contextual dimensions", which highlights the dynamic properties of constructions in a much more explicit way than her previous definitions. Subscribing to the view that constructions are indeed fluid, I do not see any reasons for the purposes of this book to give up this short, convenient and widely-used term. I will therefore retain the notion 'construction' as a descriptive tool, provided that constructions are understood as contingent form-meaning pairings in a network of associations of various kinds (symbolic, pragmatic, syntagmatic and paradigmatic), all of which are subject to strengthening or weakening. In the context of the corpus studies I conduct (see Part III), which distinguish between usage in the community and the individual, it will also be made sufficiently clear which of the two the term refers to.

The conventionalization and entrenchment feedback cycles each comprise a number of subprocesses. Conventionalization subsumes processes of usualization and diffusion, which reflect degrees of conventionality in terms of how often a particular pattern is used as an agreed-upon means to achieve a particular communicative goal ('usualization') and the spread of a pattern in the community ('diffusion'). More specifically, usualization is defined as a process that "establishes—in the case of innovations—and continually sustains and adapts conventionalized utterances types as onomasiological, semasiological, syntagmatic, cotextual, and contextual regularities of behaviour among the members of a community" (Schmid

2020: 92–93). It involves aspects of meaning (symbolization), linearity (syntagmaticalization), opposition (paradigmaticalization) and context (contextualization), and thus contributes to the systemic aspects at the aggregate level of language. Conventionalization furthermore involves processes of diffusion, a term that refers to the spread of a convention in the community and across situations (e.g. genres/registers, activity types). While usualization and diffusion closely cooperate, they highlight different aspects of conventionality or conformity. For example, technical jargon is likely to be highly usualized in the communities of practice associated with that field, but the terminology has probably not diffused to the wider speech community.

The right-hand feedback cycle represents the integration of the individual dimension. Entrenchment is defined as the continuous adaptation of individual linguistic knowledge (i.e. patterns of associations) as a function of usage in social interactions. While the patterns that speakers entrench are contingent on what is used in the communities to which they belong, ensuring mutual understanding, individual differences in experience (in addition to different cognitive abilities and routines) promote variation. In other words, individual variation constitutes a central prediction of the model. The major processes involved are routinization and schematization, which strengthen patterns of associations in speakers' minds depending on the frequency and variability of recurrent expressions or patterns (ranging from lexically filled or fixed to fully variable). While previous definitions of entrenchment have often focused on unit formation, Schmid's conception of entrenchment is broader, entailing what is known as 'token entrenchment' and 'type entrenchment' (or 'generalization', 'schematization'). Importantly, routinization is presented as the key mechanism that strengthens individual patterns of associations; schematization reflects the variability of the pattern that becomes routinized and is thus essentially included in this process. In other words, Schmid (2020: 343) argues that type and token entrenchment are not qualitatively different; there is only a "quantitative [difference] correlating with the degree of variance of what becomes routinized".

In addition to the three subsystems (usage, conventionalization, entrenchment), Schmid also reviews a wide variety of forces that act upon these components, most of them important explanations in the study of language use and language change. On the side of conventionalization, these forces include, among many others, co-semiosis and co-adaptation, interpersonal activities (extravagance, intersubjectivity), prestige/stigma and language contact; on the side of entrenchment, the usual suspects are frequency, self-priming, analogy, embodiment, salience and iconicity.

In describing language as a complex adaptive system, the various components and subprocesses that make up the EC-Model are argued to be responsible

not only for synchronic usage, but also for long-term change. A central claim in Schmid's model is that change is not only triggered by innovation (which may range from complete novelty to unobtrusive utterances) and variation, but that in fact a substantial number of changes in morphosyntax originate in the repetition of conventionalized utterance types or constructions (see Schmid 2020: Ch. 19). More specifically, it is argued that frequency changes at the collective or individual level, which may be caused by a variety of factors (see some examples in the previous paragraph), may prompt incremental changes in the construction in the long run. Schmid (2020: Ch. 19) furthermore introduces nine modules of change, which highlight common pathways of change and are grouped according to the leading process, that is, change by diffusion or by usualization and routinization on the paradigmatic or syntagmatic axes or contextual dimensions. In this way, the various trajectories of linguistic change, which have been described in historical linguistics, sociolinguistics as well as grammaticalization and constructionist research, are all connected to the primary entrenchment and conventionalization processes in the EC-Model.

It is clear from the overview presented thus far that the EC-Model is one of the first serious attempts at fully integrating the individual dimension into a comprehensive, usage-based theory of language. Together with the first empirical studies in the field and the advent of novel resources (such as EMMA), the way has been paved for examining the role of the individual in a more detailed and systematic manner than has been possible to date. This includes not only how individual speakers use language, but also the extent to which their usage might change over the course of their lifetimes. While the potential for cognitive reorganization is of course much higher in child language development, the EC-Model supports the usage-based premise that continued experience with language accumulates and continuously finetunes the structures that are learned as a child. The model thus predicts that constructional change across the lifespan is possible, but that the nature of it will be determined by the interaction of the various processes involved, suggesting that it is not merely dependent on speakers' cognitive potential, but also on social demands. For instance, as Petré and Van de Velde (2018) have shown for the grammaticalization of *be going to*, a high degree of entrenchment of the older pattern in older language users may constrain their adoption of the innovative pattern, whereas the younger generation, having been exposed to both patterns, might not exploit the innovative pattern to the fullest as usage is constrained by what is conventionalized. In other words, change in the individual is necessarily a trade-off between cognitive processes and social demands. Because the question of lifespan change is central to the present study, the following section zooms in on this topic, discussing the sociocognitive underpinnings of lifespan change and summarizing some relevant linguistic findings.

2.4.2 Lifelong learning and lifespan change

While it is widely recognized that language users continue to expand their vocabulary well into adulthood (e.g. Brysbaert et al. 2016), the issue of grammatical change in adults is still largely unsettled, with views ranging from grammatical change being possible only in first language acquisition (e.g. Lightfoot 1999) to change originating primarily in adult interaction (e.g. Croft 2000). These seemingly conflicting views can be reconciled if we acknowledge, as laid out in the previous sections, that an individual's mental grammar is both systematic and adaptive in nature, and thus conceive of a person's mental grammar as a structured system that interacts with language use at the aggregate level of the community. In this section, I provide a brief overview of recent issues in lifespan research, discussing the sociocognitive underpinnings of lifelong learning (Section 2.4.2.1) before zooming in on developments in linguistic research (Section 2.4.2.2). It is concluded that next to nothing is known about lifespan changes affecting syntactic or grammaticalizing constructions. The case studies presented in Part III are a first step toward addressing this research gap.

2.4.2.1 Sociocognitive underpinnings

In usage-based models, grammar is viewed as "the cognitive organization of one's experience with language" (Bybee 2006: 711), that is, language is learned through experience. This holds true for many other skills in life, where it is generally assumed that more experience leads to better learning, and that experiences early in life uniquely contribute to patterns of brain development. The impact of early experience on behavior and achievement later in life is well documented. Childhood trauma, for instance, is associated with a higher risk for depression in adulthood (Heim et al. 2008), and early exposure to alcohol with increased odds of lifetime dependence (Grant and Dawson 1997). In second language acquisition, age of arrival is found to correlate with ultimate attainment of the L2, at least for accent (Flege et al. 1999), and research on congenitally deaf children with cochlear implants has shown that children with the longest period of auditory deprivation had abnormal response latencies to speech after implantation, whereas children with less than 3,5 years of auditory deprivation show latency responses similar to those of normal-hearing peers after only a couple of months (Sharma et al. 2002). Positive impact, while generally less researched than negative impact, is also attested. For example, early musical training has been shown to foster brain development, and has long-term positive effects on verbal abilities and reasoning skills (Miendlarzewska and Trost 2014). Similarly, bilingualism is associated with enhanced executive function in children, specifically attention and working memory, and has been shown to

postpone age-related losses in this domain (Bialystok et al. 2004). Lasting effects of experience during core developmental stages have traditionally been related to the notion of 'critical periods', which posits that learning in various domains is contingent on sharply defined developmental windows of neural plasticity.

Variants of the critical period hypothesis have been proposed for language learning (e.g. Penfield and Roberts 1959; Lenneberg 1967). These were highly influential and sat well with the dominant linguistic enterprise in the second half of the twentieth century. Assuming that a person's grammar is largely fixed by early adulthood (Chomsky 1995), generativists view children's acquisition processes as the primary locus of diachronic change (e.g. Lightfoot 1979, 1999; Clark and Roberts 1993; Henry 1997). While these approaches rely on the idea that children's reanalysis of ambiguous input propels linguistic change, sociolinguistic studies have underscored the social embedding of variation and change, thereby, among other things, extending the scope to various age groups which may exhibit differential accommodation of innovative variants (e.g. Tagliamonte and D'Arcy 2007). Like the generative enterprise, however, early methodological advances in the field of sociolinguistics, in particular the apparent time construct, postulate the validity of the critical period for language acquisition. That is, only if speakers' linguistic repertoires remain stable after adolescence can age-stratified variation be assumed to reflect diachronic linguistic developments.

Research into cognitive development, including language acquisition, finds its parallel in research strands focusing on aging. In line with the western cultural understanding of aging as cognitive decline, mirroring childhood and adolescent growth in cognitive abilities in reverse, various studies have linked healthily aging with lower cognitive performance (Emery 1986; O'Sullivan et al. 2001; Burke 2006; Deary et al. 2009; Singh-Manoux et al. 2012; Lindenberger 2014), sometimes arguing that some aspects of age-related cognitive decline set in after adolescence only to continue progressively in time (e.g. Salthouse 2009). Changing linguistic abilities have also attracted scrutiny in the context of pathological aging, with neurodegenerative disorders like Alzheimer's and Parkinson's disease causing various forms of language impairment (Illes 1989; Szatloczki et al. 2015; Fraser et al. 2016).

The focus on cognitive development in one strand of research, and on aging in the other, strengthens the idea of discontinuity and clear-cut developmental stages. It also means we know comparatively little of linguistic capacity in the middle age range. However, with more and more researchers advocating a more dynamic and comprehensive view of cognition than the rise-and-fall pattern traditionally purported, this may start to change. While no-one denies the greater plasticity of younger brains and the vast changes neural and cognitive systems undergo during childhood, many now prefer to refer to those periods in which brain structure

and function are unusually susceptible to experience as sensitive rather than critical periods, which "underscore the potential for learning and brain plasticity to continue throughout the lifespan" (White et al. 2013: 1).[8] An early example of lifespans viewed dynamically is Baltes (1987), who argues that development is a lifelong process and that any developmental change, regardless of when in life it takes place, is paired with gains and losses. Baltes's views also reflect the importance of individual experience: individual development is understood as the outcome of a variety of biological and socio-cultural processes and their interaction with age, which may vary heavily depending on individual experience (see also Hayat et al. 2014).

Different processes dominate at different stages in life. White et al. (2013), for instance, show how drastic changes witnessed in sensitive periods are driven primarily by bottom-up processes, while afterwards environmental input is increasingly modulated by top-down processes. In bottom-up or statistical learning, a system that is initially 'underspecified' or 'broadly tuned' to environmental input is gradually ousted by more refined neural representations that react more selectively to input based on experience (cf. the Hebbian principle "neurons that fire together, wire together"). Once representations are in place, it is mainly top-down processes, such as attention, which regulate bottom-up signals to exploit the "residual capacity for adult cortical reorganization" (White et al. 2013: 3). Both bottom-up and top-down processes interact throughout the lifetime, but their relative predominance varies as a function of age. Similarly, the impact of social processes is not constant throughout people's lives, but has been found, for instance, to influence linguistic performance not only in language acquisition, but also in adulthood (Lev-Ari 2016b).

Differentiation is needed also with regard to the type of ability or task involved, how performance scores on those tasks were measured, and what they actually tell us about the possibility of lifelong learning. It is well established by now that some cognitive functions are more affected by brain changes as a result of aging than others. One widely cited model, developed by Horn and Cattell (1966, 1967), contrasts crystallized and fluid intelligence, where the former represents general knowledge and experience and the latter the ability to adapt to new situations (e.g. problem solving, logic, and pattern detection). Crystallized intelligence is thought

8 Reviewing recent event-related brain potential (ERP) studies in second-language morphosyntax, Steinhauer (2014) finds that neurocognitive processing mechanisms in L2 learners are not immediately, but increasingly native-like. Steinhauer (2014: 393) furthermore argues that "age-of-acquisition effects in SLA are not primarily driven by maturational constraints" as it is often impossible to differentiate between ERPs of native speakers and those of late, but highly proficient L2 learners.

to accumulate or remain stable through adult life, whereas fluid intelligence peaks in adolescence and then wears out. In a similar vein, Craik and Bialystok (2006) distinguish between *representation* and *control*, and explicitly refer to language learning: "vocabulary and grammar develop through childhood with only small age-related losses from age 70 on [...]. But aging brings problems of *access* to stored information, even if there is no decrease in knowledge" (Craik and Bialystok 2006: 131). Experimental studies that only measure access to representations therefore present a distorted picture.

Ramscar and colleagues have pointed out other pertinent issues in experimental design: "Psychometric tests do not take account of the statistical skew of human experience, or the way knowledge increases with experience" (Ramscar et al. 2014: 7). They illustrate this methodological issue with the task of recalling birthdays, which becomes more complex with every exposure to a new birthday.[9] A person who recalls 600 birthdays with 95% accuracy, they note, can hardly be argued to have a worse memory than someone who recalls merely 6 correctly 99% of the time. Similarly, adults' lower performance on Paired-Associate-Learning tests "reflect the 'cost' of learning" rather than proving age-related declines in information-processing (Ramscar et al. 2017: 1171). Failure to factor in learning thus perpetuates the "myth of cognitive decline" (Ramscar et al. 2014).

Harada et al. (2013) mention another common methodological issue with studies of brain aging that is related to societal and intergenerational changes. Most studies, for obvious reasons, are not truly longitudinal but employ a cross-sectional design that draws on subjects from different ages as a proxy to age-related brain change. Such studies, Harada and colleagues argue, may be confounded in that it is not just age, but also cohort differences (e.g. as a result of fundamentally different experiences in life and skills acquired by, for instance, subjects born in the 1920s and 1980s) that explain performance. The effects of aging may thus be overrated. In fact, when reanalysing a series of longitudinal and cross-sectional studies, Williams and Klug (1996: 219) found "cohort differences [to be] at least as strong as age differences".

A final point to be mentioned is how maturation and aging of the brain does not uniformly and simultaneously affect all cortical areas. Certain regions that typically support language functions (more specifically, posterior temporal lobes in the left hemisphere) are shown to mature later than any other area, which provides

9 A similar explanation could be proposed for age-related delays or errors in word retrieval (see Connor et al. 2004 for an overview). In a large-scale study, Brysbaert et al. (2016) calculated that a person on average learns 6,000 new lemmas between the ages of 20 and 60 (or about one every two days).

neurological evidence for the possibility of lifespan development of particular language skills (Sowell et al. 2003: 309, 314; see also Shafto and Tyler 2014).

2.4.2.2 Linguistic findings

Are these findings corroborated by linguistic studies? Language development across the lifespan is a relatively recent research paradigm in linguistics (see de Bot and Schrauf 2009; Gerstenberg and Voeste 2015a,b). Linguistic flexibility with regard to lexis has not really been a matter of debate as it is widely assumed that lexical knowledge is accumulated over time, and that particular words may be adopted or fall out of use during the lifespan of individuals. Phonology and morphosyntax, on the other hand, are traditionally assumed to be more or less fixed by adulthood. An extended argument for this wide-spread view can be found in Meisel et al. (2013), who argue that the lexicon is malleable beyond first language acquisition, but that 'core grammatical properties' remain unaltered across the adult lifespan. Any variation found in adulthood is relegated to the domain of language use, much in line with Newmeyer's (2003) famous dictum that "grammar is grammar and usage is usage". Usage-based approaches have argued that such a strict distinction is untenable, and that is also the perspective taken here.

A growing body of studies indicates that there is more variability across the adult lifespan than previously presumed (e.g. Yaeger-Dror 1989; Harrington et al. 2000; Nahkola and Saanilahti 2004; Bergs 2005; Raumolin-Brunberg 2005, 2009; Sankoff and Blondeau 2007; Raumolin-Brunberg and Nurmi 2011; Rickford and Price 2013; Bowie 2015; Bowie and Yaeger-Dror 2015; Buchstaller 2015, 2016; MacKenzie 2017; Petré and Van de Velde 2018; Anthonissen and Petré 2019; Neels 2020). Most studies to date concentrate on phonetic and phonological change and tend to contrast two discrete points in time. Harrington et al. (2000), for instance, compared Queen Elizabeth II's vowel sounds in her Christmas broadcasts from the 1950s with those from the 1980s and found that she had shifted significantly toward (though not attained) a southern-British accent, which is characteristic of younger and/or middle-class speakers. They suggest that if the Queen's speech is affected by changes in the wider community, the changes are presumably even more pronounced in adult speakers who find themselves in a less influential social position.

Another famous Briton featured in a recent study by MacKenzie (2017), who examined the extent to which Sir David Attenborough's realization of the approximant /ɹ/ as a tap ([ɾ]) was affected by the loss of the tapped variant in English Received Pronunciation. Comparing data from the 1950s and 2000s, MacKenzie finds that Attenborough did not participate in the community change. However, a comparison of the two contexts in which the tap was originally found, controlled

by the frequency of the item, reveals an interesting lifespan development. In the 1950s, Attenborough's rate of tapping was about twice as high in word-internal position (more specifically, intervocalic and after a stressed vowel, e.g. *forest*) as in linking position (e.g. *far away*). Fifty years later, Attenborough's use of taps had increased, but crucially only in linking position with high-frequency elements (e.g. *for a*, *their own*), which had the effect of erasing the earlier distinction between the two tapping contexts. MacKenzie (2017: 8) suggests that this development may have been induced by chunking processes, that is, Attenborough's accumulated experience in producing such two-word collocates might have caused them to resemble "something more like individual words". While case studies of this type tend to be limited in scope, taken together they convincingly show that a variety of factors—both social and cognitive in nature—might be at play in lifespan change.

Sociolinguistic studies (again, mainly in the domain of sound change) have also shown that change in the individual and the community may occur in a variety of constellations. In this respect, it is useful to refer to Table 2.1, which depicts the relations between data in real and apparent time.

Tab. 2.1: Sociolinguistic classification of change in the individual and community (adapted from Rickford and Price 2013: 145)

	Real time		**Apparent time**
	Individual	**Community**	**(Synchronic pattern)**
1. Stability	stability	stability	flat
2. Age-grading	change	stability	regular slope with age
3. Generational change	stability	change	regular slope with age
4. Communal change	change	change	flat
5. Lifespan change	change	change	regular slope with age

The table originally comprised only the first four patterns (Labov 1994: 83). As Labov (1994: 84) and Wagner (2012: 373) point out, the traditional focus of (historical) sociolinguistics has been on changes of the third type, which assumes linguistic stability in adulthood and is "most typical of sound change and morphological change" (Labov 1994: 84). Two scenarios in the original proposal describe instability in the individual. Age grading, while variously defined in the literature, has usually been associated with cyclic patterns and variables that are sensitive to pressures in the linguistic marketplace, i.e. carry social significance (see Wagner 2012 for a discussion). Communal change refers to the concurrent, community-wide adoption of an innovation across all individuals and age groups. Examples of such a rapid diffusion are often found in the lexical domain (see Schmid 2020: 321).

It was not until much later that Sankoff (2005: 1011) and Sankoff and Blondeau (2007: 532) added a fifth scenario called 'lifespan change', which is reserved for cases characterized by instability in individuals and the community and whereby change in the former proceeds in the direction of the community change. The modification was prompted by one of the first, and still one of the few, large-scale panel studies that exist today, details of which can be found in Sankoff and Blondeau (2007). Contrary to their expectations, Sankoff and Blondeau found that adulthood was not uniformly characterized by stability: a substantial minority of speakers of Montreal French had changed their usage of the variable /r/ along with the community trend.

The juxtaposition of real-time and apparent time data indicates that the former has much more explanatory force when it comes to the study of individual trajectories in linguistic change. It is also evident that such real-time data should preferably take the form of what sociolinguists refer to as panel data, i.e. repeated samples of the same individuals. Trend studies, which sample from the same community, but not the original participants, cannot be used to measure individual trajectories directly (see Wagner 2012: 377).

That said, even if one has longitudinal data to work with, the interpretation of real-time data in Table 2.1 is not completely satisfactory and it might turn out to be difficult in practice to classify an attested change in individuals or communities as either one of the five options. For example, the definition of lifespan change by Sankoff (2005) and Sankoff and Blondeau (2007) holds that individuals follow the direction of the community change. This inevitably means that changes across the lifespan that are not or only partly informed by social trends, e.g. the Attenborough case described above, are not captured by this model. Patterns of change that are more strongly driven by processes of routinization in the individual (e.g. frequency effects, stylistic preferences) are likely to result in considerable variation in individual lifespan trajectories. Likewise, generational change assumes linguistic stability in individuals, which makes it an incremental or step-wise process rather than a continuing one. But is it to be expected that all individuals in a community remain stable? If not, how many individuals need to move along with the community trend in order for the change to classify as pattern 5? In this study, I will not make these assumptions and use the terms 'lifespan change' and 'generational change' in a non-variationist sense so that 'lifespan change' and 'generational change'—as their names suggest—reveal something about the (lack of) change in individuals and between generations, respectively, but not both at the same time.

Another issue that complicates things is the following. Can we speak of 'patterns of change' when what is described is usually a comparison of two discrete points in time? As Rickford and Price's (2013) panel study of two female speakers of African American Vernacular English (AAVE) illustrates, intermediate data

points might complicate the picture. Comparing the initial and final recordings, which are approximately 20 years apart, Rickford and Price found that both women significantly reduced their use of AAVE grammatical vernacular forms. For one speaker, this trend was confirmed by the intermediate recording. In the other case, however, multiple intermediate recordings of the speaker were available and they showed dramatic fluctuations in use. In other words, longitudinal studies that merely contrast two points in time run the risk of insinuating the existence of a linear trend that in reality might not be there. Rickford and Price (2013: 172, emphasis in original) conclude that "longitudinal studies of linguistic change might benefit from, if not require, at least *three*, not just *two* time points".

Where does this leave us? The foregoing discussion has shown that while the study of language in adulthood is perhaps no longer the "vast wasteland" it has once been (see Eckert 1997: 165), there is still much to be learned. Barring a few exceptions, most studies conducted to date have concentrated on phonological change or are fairly small in size. Resources and/or circumstances often do not permit to obtain panel data for more than two points in time, making it hard to map out the trajectory of the change (which may not be monotonic). Longitudinal corpus studies of individuals, which track the dynamics of language across multiple points in time, have recently been successfully applied to map the effects of neurodegenerative disorders and detect their onset, but not usually beyond the lexical domain[10] (Garrard et al. 2005; van Velzen and Garrard 2008; Le et al. 2011; van Velzen et al. 2014; Lancashire 2015). Moreover, they are generally focused on language pathology, with less interest for normal longitudinal cognitive developments. It follows that next to nothing is known about lifespan changes affecting syntactic or grammaticalizing constructions in the middle age brackets.

Recent studies related to the *Mind-Bending Grammars* project illustrate that there is much scope for examining the nature of linguistic change at this stage in life. For instance, taking up the case of *be going to*, Petré and Van de Velde (2018) traced the extent to which features signaling a higher degree of grammaticalization increased in frequency across the lifespan. While it could not be established that either stability or change is the norm, some individuals at least exhibited a significant increase of grammaticalized behavior across the lifespan. Similarly, Anthonissen and Petré (2019) present evidence that while the adoption of innovative features in grammaticalizing constructions is constrained by age, some speakers do acquire such features later in life (even past the age of 60). They also

10 Some studies have ventured into the syntactic domain, applying broad measures to examine syntactic complexity such as words per sentence or number of clauses per sentence (Garrard et al. 2005; Le et al. 2011), or the use of syntactic constructions such as passives and auxiliaries (Le et al. 2011).

find that some innovative features of the *be going to* construction were more easily adopted in later life than others, which might indicate that high entrenchment of source constructions prevents the adoption of more disruptive extensions at more advanced ages. In this book, I will continue this line of research with two novel case studies. Following the lifespan trajectories of five generations of speakers, I hope to flesh out the nature of variation and change at the level of the individual and the community.

3 Systemic change and the rise of the passive

3.1 Introduction

The English language has changed considerably throughout the course of its documented history, both lexically and structurally, and arguably in a more pervasive manner than its close relatives German and Dutch. One of the syntactic innovations in English that Dutch and German lack are the special passives which are the focus of this study. Their expansion in Early Modern English has recently been related to the systemic change English underwent, which involved the decline of the verb-second (V2) rule and the fixation of SVO word order and led to a general shift in the predominance of syntactic and information-structural principles (see, among others, Seoane 1999, 2006; Los 2009, 2012; Dreschler 2015). The present chapter elaborates on these changes (Section 3.3) and delineates the rise of cross-linguistically rare passive constructions in light of these historical processes (Section 3.4), which have not only encouraged the development of new passives but have shaped Modern English grammar as a whole. Before embarking on these developments, I introduce the central concepts of information structure (Section 3.2), which will be key to our understanding of the changes that take place between Old and Early Modern English and the role of the passive as an information-structuring device.

3.2 Information structure

3.2.1 Basic notions

Speakers have at their disposal a set of coding options which help optimize information transfer and coherence in discourse, such as prosody, the positioning of constituents in the sentence and specialized information-packaging constructions. These linguistic forms serve the dual function of establishing a logical connection between two consecutive utterances and marking the information status of various propositional elements (Ward and Birner 2004). As such, they reflect the speaker's assumptions about the hearer's mental representations of discourse entities and propositions. Lambrecht (1994) identifies three information-structural categories:

(1) a. presupposition and assertion
b. identifiability and activation
c. topic and focus

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The categories (1a) and (1b) pertain to the cognitive representations of discourse referents[1], that is, they have to do with the speech participants' knowledge and level of consciousness regarding propositions and their elements in a given situation. Propositional information is pragmatically presupposed if it is known to both the speaker and the hearer, that is, if the speech participants are assumed to have a mental representation of it. If the propositional information is not part of the common ground, but available only to the speaker at the time of utterance, it is pragmatically asserted. A similar conceptual distinction applies to the identifiability of discourse entities. Adopting the term 'identifiability' from Chafe (1976), Lambrecht distinguishes between identifiable and non-identifiable referents depending on whether the cognitive representation of the referent is shared by the speaker and hearer or exists solely in the speaker's mind. A second aspect of the information status of discourse referents is their activation state (active/accessible/inactive), a parameter which only operates if an item is identifiable. A referent is active if it is "the current center of attention of the speech participants" (Lambrecht 1994: 94). When an item is not at the forefront of the discussion, it may still be accessible because it has been textually or situationally evoked or is, in some other way, inferrable. An inactive referent, on the other hand, lacks any contextual salience.

In Lambrecht's framework, the third category, topic and focus, is distinguished from (1a) and (1b) on qualitative grounds: whereas (1a) and (1b) can be conceived of as descriptive-referential seeing that they designate certain properties of the mental representations of discourse referents, topic and focus are defined in relational terms (see also Jacobs 1984; Vallduví and Engdahl 1996). They "involve[…] pragmatically construed relations between denotata and propositions" (Lambrecht 1994: 335) and differ with regard to the predictability of these relations. The topic relation is defined as follows:

> A referent is interpreted as the topic of a proposition if IN A GIVEN DISCOURSE the proposition is construed as being ABOUT this referent, i.e. as expressing information which is RELEVANT TO and which increases the addressee's KNOWLEDGE OF this referent. (Lambrecht 1994: 127)

Lambrecht, in other words, does not define topichood of a discourse entity by the cognitive properties it may have (as he did for (1a) and (1b)), but by the pragmatic sentential relation between the denotatum and the assertion, which he characterizes as an 'aboutness' relation. Still, this relation is considered to be predictable or recoverable precisely because the topic entity will display certain properties: for an entity to be able to serve as a topic, it must be identifiable and have a certain degree

1 Lambrecht (1994: 74) uses the term 'discourse referent' as a cover term to refer to discourse entities and/or propositions.

of activeness and relevance in discourse. As Vallduví and Engdahl (1996: 461) put it, the topic is the part of an utterance that "anchors the sentence to the previous discourse or the hearer's 'mental world'". By contrast, the focus relation marks the relation between the focus denotatum and proposition as non-recoverable (Lambrecht 1994: 207).

What Lambrecht's concepts share is that in one way or another they all relate to the given–new distinction, that is, "the degree to which information is assumed to be available to the hearer prior to its evocation" (Birner and Ward 1998: 9). Thus, presupposition, identifiability, activeness and topic all relate to givenness, while assertion, non-identifiability, inactiveness and focus evoke newness. It needs to be emphasized that from a theoretical perspective the terms 'given/old' versus 'new' information do conflate a number of qualitative distinctions. In particular, the terms have been used to refer to both relational and non-relational given- and newness, which obscures the fact that a focal expression (an expression contributing discourse-new information) need not be be hearer-new; indeed, the expression may very well denote a referent that exists in the hearer's mind (see, among others, Firbas 1966; Chafe 1976; Prince 1992; Lambrecht 1994; Vallduví and Engdahl 1996; Ward and Birner 2001; Huddleston and Pullum 2002). Consider the pair in (2).

(2) a. *Did they give the job to you or to Mary?*
b. *They gave it to her.*
(Huddleston and Pullum 2002: 1370)

The expression *her* represents non-relational givenness (it refers to the previously evoked discourse referent *Mary*), but relational newness as part of the assertion that Mary got the job. The given–new distinction is, in other words, a fairly crude one, but it remains a useful concept because of its intuitive appeal and widespread use.

In sum, speakers structure their propositions in such a way that hearers can track relationships between the different discourse referents. This information may be conveyed by various linguistic forms, including prosody, constituent order, morphology, specialized constructions and discourse particles (see Anthonissen 2020b: Ch. 3 for a discussion). The following section will zoom in on the expression of information structure by means of syntactic principles and coding options, which are most relevant for the case study at hand. It is important to note at the outset that information structure need not be indicated by one specific device, but can be and often is redundantly encoded at different formal levels at once. Additionally, different languages (along with dialects and different diachronic stages of a single language) may vary as to how the information-structural tasks

are distributed across their morphological, syntactic and phonological systems, that is, there is not always a strict division of labor within the set of available expressions.

3.2.2 Constituent order and information packaging

Information-structural relations are realized in the way constituents are ordered on the syntagmatic axis. The way speakers arrange information in an utterance is determined by certain principles. Two principles that are distinguished in the work of Mathesius (1975) and Firbas (1992) are particularly pertinent to the discussion in Sections 3.3 and 3.4: the grammatical principle and the linearity principle. Note that they are not mutually exclusive (a single utterance may comply with both principles) and that their relative importance is language-specific and subject to change.

The grammatical principle applies when the ordering of elements in a clause is determined by a grammaticalized word order pattern, such as SVO in Modern English. It is contrasted to, though not by definition in discordance with, the linearity principle. The linearity principle draws on the notions of 'linear modification' (Bolinger 1952) and 'communicative dynamism', a central feature of the Prague School theory of functional sentence perspective (FSP) (cf. Firbas 1992). It entails that sentence elements are arranged according to a gradual rise in communicative dynamism (roughly, informativeness). This typically induces a given-before-new ordering of information within a given sentence (Birner and Ward 2009), that is, information that the speaker assumes to be known to the hearer precedes information that she assumes to be new (see e.g. Halliday 1967; Chafe 1976; Prince 1981; Kuno 1987). While the linearity principle is generally assumed to (co)determine word order in many European languages, it is more powerful in languages with flexible word order (Chamonikolasová 2009).

The historical development of English is a case in point. The following aspects discussed by Firbas (1957, 1992) are at the heart of the matter.[2] Due to its comparatively free word order, speakers of Old English could easily arrange constituents in accordance with the linearity or given-before-new principle, which is considered the dominant principle at the time. In practice this means that, among other things, non-subject constituents can be placed in clause-initial position if they encode information that has a lower information value (i.e. are more given) than the subject, which then appears later in the clause. This is illustrated in the transition

2 A more comprehensive discussion of the interplay between syntax and information structure in the history of English is presented in Section 3.3.

from (3a) (translation of the Old English text) to (3b), where *Hine* links back to the previously mentioned Quintianus.

(3) a. 'Lo then! Quintianus, Christ's adversary, went in a ship over Semithetus (the river Symæthus) about Agatha's possessions, desiring also to apprehend all her kindred, but he could not for Christ.'

b. *Hine gelæhte an hors, þa ða he læg on ðam scipe, hetelice*
him seized a horse then when he lay on that ship savagely
mit toðum and hefde him upp
with teeth and lifted him up
'As he lay in the ship, a horse grabbed him savagely with its teeth, and lifted him up'
(coaelive [Agatha]:211.2145; adapted from Dreschler 2015: 229; Nijhuis 2008: 86)

As word order became increasingly fixed, the grammatical principle replaced the linearity principle as the primary factor governing the positioning of elements in a clause. This does not imply that Modern English is insusceptible to the linearity principle, only that the relationship between the two principles pans out differently. In fact, Firbas (1992: 119) points out that in spite of its strict word order, "[Modern] English shows a strong tendency to render the grammatical subject thematic and in this way to avoid or mitigate a 'clash' between the grammatical and the FSP linearity principles".

The shift in the creation of canonical word order patterns is reflected in what constitutes markedness in a particular stage of the language. Firbas (1992) suggests that in Old English deviation from the linearity principle creates marked orders or an emotive effect, while in Modern English markedness is induced by deviation from the dominant grammatical principle. Thus, when two languages differ with regard to their dominant word order principle, "marked word orders differ in the principle from which they deviate" (Firbas 1992: 122). The sentence in (3b), for instance, repesents an unmarked order in Old English, but would be marked in Modern English because it diverges from canonical SVO. The translation, which reorders the elements into an SVO order (*a horse grabbed him*), reflects this.

Recent studies on information structure have demonstrated that non-canonical word orders in Present-Day English are associated with particular information-structural constraints (Huddleston and Pullum 2002; Ward and Birner 2004, 2011; Birner and Ward 2009). More specifically, these scholars are concerned with a set of alternative word order patterns commonly referred to as 'information-packaging constructions', examples of which are given in Table 3.1. The term 'packaging' was coined by Chafe (1976: 28) and emphasizes the idea that these constructions

"have to do primarily with how the message is sent and only secondarily with the message itself".

Tab. 3.1: Information-packaging constructions (Huddleston and Pullum 2002: 1366)

Construction	Example (Counterpart)
Preposing	*This one she accepted.* (She accepted this one.)
Postposing	*I made without delay all the changes you wanted.* (I made all the changes you wanted without delay.)
Inversion	*On board were two nurses.* (Two nurses were on board.)
Existential	*There is a frog in the pool.* (A frog is in the pool.)
Extraposition	*It is clear that he's guilty.* (That he's guilty is clear.)
Left dislocation	*That money I gave her, it must have disappeared.* (That money I gave her disappeared.)
Right dislocation	*They're still here, the people from next door.* (The people from next door are still here.)
Cleft	*It was you who broke it.* (You broke it.)
Passive	*The car was taken by Kim.* (Kim took the car.)

Information-packaging constructions are considered non-canonical not only because they occur less frequently than their 'basic' counterparts, but also because they display distinctive formal properties and are limited to specific discourse contexts (Birner and Ward 2009: 1167). That is, they can only be used felicitously if one or more constituents belong to a particular information-structural category. Because their use is information-structurally constrained and tied to particular discourse contexts, information-packaging constructions behave in characteristic ways. It follows that language users can exploit these distinctive traits to signal the information status or pragmatic relations (topic/focus) of constituents to the addressee.

Leaving aside some of the complexities and particularities that the use of information-packaging constructions involves,[3] the associations between their

3 A general overview can be found in Huddleston and Pullum (2002: Ch. 16) and the work of Birner and Ward (e.g. Birner 1994; Birner and Ward 1998, 2009; Ward and Birner 2001, 2004, 2011). There is also a large body of research on the individual constructions, see Lambrecht (2001), Patten

syntactic and information-structural properties can be captured by some broad generalizations. For example, preposed constituents represent old information, whereas postposed constituents (including existentials and extraposition) signal that their referents are new. These restrictions are commonly referred to as *absolute* information-structural constraints; by contrast, argument-reversal constructions such as subject-dependent inversion and long passives impose a *relative* constraint in that the preverbal constituent must be at least as old as the postverbal argument (Ward and Birner 2004, *inter alia*). In left- and right-dislocation, an NP that is co-referential with a pronoun in the clause is moved to pre-clausal or post-clausal position. In contrast to the information status in pre- and postposing constructions, left- and right-dislocated NPs represent discourse-new and discourse-old information, respectively (Birner and Ward 2009). According to Prince (1997), one of the primary functions of left-dislocation is to facilitate discourse processing by extracting a new discourse referent from a position that is by convention more strongly associated with givenness. A cleft, finally, is an instance of a biclausal construction, consisting of (i) a copula matrix clause with an empty subject and (ii) a relative clause "whose relativized argument is coindexed with the predicative argument of the copula" (Lambrecht 2001: 467). Broadly speaking, its particular syntax marks the clefted clause as the presupposition (information assumed to be known or uncontroversial at the time of speaking) and the relativized argument as being in a focus relation to the proposition (Lambrecht 2001).

What all these constructions share is that they are typically employed when there are specific information-structural demands, that is, when the canonical, more 'basic' order would violate the linearity or given-before-new principle. Firbas (1992: 120), for example, explicitly mentions the passive as a strategy to avoid such a clash. By harmonizing syntactic and information-structural requirements, information-packaging constructions facilitate discourse processing and strengthen discourse coherence. This may appear counterintuitive to the observation that non-canonical word orders require more processing efforts than do their canonical counterparts (see Kaiser and Trueswell 2004 and Yano and Koizumi 2018 for an overview of experimental and neurolinguistic studies demonstrating this effect). However, most existing work has studied sentences in isolation so that the impact of discourse factors is overlooked. Kaiser and Trueswell (2004) and Yano and Koizumi (2018) show, for Finnish and Japanese respectively, that processing difficulties associated with non-canonical word orders are alleviated if the test sentences are presented along with their appropriate discourse contexts. Some-

(2012) and Hedberg (2013) on clefts and Geluykens (1992) and Prince (1997) on left-dislocation, to name but a few.

times non-canonical word orders even lead to anticipation of information status on the part of the hearer. Thus, in an experiment with auditory and visual stimuli, Kaiser and Trueswell (2004) found that non-canonical OVS sentences (in Finnish) prompted anticipatory eye movements to the discourse-new referent (the second NP, in this case the postverbal subject); no such effect was found with canonical SVO orders. In other words, the non-canonical order allows Finnish language users to make predictions about the information status of the upcoming referent before they have even heard it. In a similar fashion, information-packaging constructions in English provide the reader or hearer with cues as to the information-structural relations between constituents.

Language users can thus rely on a variety of ways to present information and connect clauses in a coherent manner. In general, speakers of English will aim to comply with both the grammatical principle and the linearity or given-before-new principle to optimize information transfer.

3.3 Systemic change

Section 3.2 introduced several key information-structural concepts and illustrated how information-structural categories can be realized in syntax. The present section expands on the interaction between syntax and information structure, demonstrating how radical shifts in this relationship unfold at various stages in English history as part of a larger systemic change. Aspects of these changes are discussed in Section 3.3.1 and 3.3.2. While this systemic change entails many morpho-syntactic losses, other areas of the grammar thrive and expand as a result of it. The growth of the passive, discussed in Section 3.4, is one prominent example that must be viewed in this light.

3.3.1 Syntactic change

Old English syntax has often been compared to (and contrasted with) that of modern West Germanic languages such as Dutch and German (e.g. van Kemenade 1987; Haeberli 2002), mainly because in these languages the finite verb in main clauses tends to occupy the second position, regardless of the constituent in the first slot. This 'verb-second' rule, V2 for short, is illustrated below with various constituents in clause-initial position.

(4) *we sculon swiðe smealice ðissa ægðer underðencean*
we must very narrowly these both consider

'we must consider both of these very carefully'
(CP,48,23; van Kemenade 1987: 42)

(5) *Þone asende se Sunu*
this sent the son
'the son sent this one'
(ÆHom_9:114.1350; Speyer 2010: 38)

(6) *On twam þingum hæfde God þæs mannes saule gegodod*
in two things had God the man's soul endowed
'with two things God had endowed man's soul'
(ÆCHom.I,1 184.161; Fischer et al. 2017: 189)

It is well established by now that the picture is not as straightforward as examples such as these may suggest. V2 does not apply categorically in Old English in the way it does in German and Dutch, but alternates with V3 orders (besides V1, see below), where the initial element is followed by the subject in second and the verb in third position, giving rise to XSV rather than XVS orders. To a certain extent, this variation is structured, as it depends on the properties of the subject: V3 clauses are particularly common with pronominal subjects, whereas full noun phrases tend to trigger V2 (Kohonen 1978; van Kemenade 1987; Pintzuk 1991; Haeberli 2002). In some cases, however, the order of constituents defaults to XVS even if the subject is a pronoun. When the clause-initial element is a *wh*-word (7), the negator *ne* (8) or the adverb *þa/þonne* 'then' (9),[4] the verb is in second position, preceding lexical as well as pronominal subject NPs (Koopman 1998; Fischer et al. 2000; Pintzuk and Haeberli 2008; Los 2012; Ringe and Taylor 2014).

(7) *Hwæt secgce ge?*
what say you
'what do you say?'
(ÆHom_3:24.421; Ringe and Taylor 2014: 400)

(8) *Ne hate ic eow na þeowan,*
NEG call I you not servants
'I do not call you servants'
(ÆHom_3:24.421; Ringe and Taylor 2014: 400)

(9) *Þa het se bisceop hi gelangian*
then commanded the bishop her call

4 A similar, but less prominent effect is found with the adverbs *nu* 'now' and *swa* 'so' (Fischer et al. 2000: 108; Ringe and Taylor 2014: 399). For an overview and some distributional data of inversion after sentence-initial adverbs, see Koopman (1997, 1998).

'then the bishop commanded to call her'
(ÆLS_[Eugenia]:74.232; Ringe and Taylor 2014: 400)

Interestingly, it is in *wh*-questions and negative-initial clauses that we find V2 in Present-Day English, as shown in (10).

(10) a. *Where did he go?*
b. *Never had he seen anything like that.*

Subject-verb inversion also occurs in yes/no questions, imperatives and in narrative inversion, yet in the absence of a constituent in the left periphery, this type of inversion yields V1 rather than V2 orders (Fischer et al. 2000: 106–107). V1 represents "a stylistic word order deviation typical of V2 languages" (Seoane 2006: 364).

Another well-researched syntactic property of early English concerns verb-complement order, in particular the relative order of object and verb. In the standard generative account, Old English is treated as having a "base" or "underlying" OV order (e.g. Lightfoot 1976, 1977; Canale 1978; van Kemenade 1987; Pintzuk and Kroch 1989; Koopman 1990; Stockwell and Minkova 1991). This analysis draws on the behavior of the verb in subordinate clauses (11) and the order of auxiliary and main verb in examples like (12). Further evidence comes from the position of particles, which—at least in subordinate clauses—is also predominantly preverbal (see Hiltunen 1983: 111). Pintzuk and Kroch (1989) adduce metrical evidence for OV on the basis of *Beowulf*.

(11) *þæt ic þas boc of Ledenum gereorde to Engliscre spræce awende*
that I this book from Latin language to English tongue translate
'that I translate this book from the Latin language to the English tongue'
(ASL,XXXI,468; van Kemenade 1987: 16)

(12) *him þær se gionga cyning þæs oferfæreldes forwiernan mehte*
him there the young king the crossing prevent could
'The young king could prevent him from crossing there'
(Or 44.19-20; Pintzuk 1996: 245)

As with V2, the picture is not nearly as neat as in Modern Dutch and German. In fact, it is not hard to find scholars who advocate a radically different view. Fries (1940), for instance, assumes free worder in Old English, whereas Haiman (1974), Malsch (1976) and Reddick (1982, 1990) make the case for base VO order. In an attempt to reconcile the existing variation between OV and VO orders with claims of basic word order, generative accounts have postulated optional movement rules such as the extraposition of heavy constituents (e.g. Stockwell 1977; van Kemenade 1987; Pintzuk and Kroch 1989). However, examples such as (13) (object complement)

and (14) (adjunct), where the postverbal material can hardly be said to be heavy, are numerous in Old English prose. Fischer et al. (2000: 148) conclude that the proposed movement "rule[s] must be very liberal indeed" if they are to account for these and other attested patterns as a unified phenomenon.

(13) *þu hafast gecoren þone wer*
you have chosen the man
'You have chosen the man'
(ApT 34.23; Fischer et al. 2000: 148)

(14) *ða ongunnon hi wepan mid him*
then began they weep with him
'then they began to weep with him'
(Bo 35.102.25; Fischer et al. 2000: 148)

Yet another proposal is found in Pintzuk (1991, 1996) and Pintzuk and Taylor (2006), who argue that there is synchronic competition between OV and VO grammars, with some surface word orders being derived from an underlying OV syntax, others from an underlying VO syntax (Double Base Hypothesis). Competition is said to take place within individual speakers, who have internalized two separate grammars and are code-switching between them (Pintzuk and Taylor 2006: 250). From a usage-based and variationist perspective, it seems rather far-fetched to postulate the existence of two grammars in individual speakers in order to account for variation in one aspect of the language system. Speakers deal with variation all the time. Also, variation between near-synonymous constructions is rarely truly random, but may be associated with a variety of factors (see, for instance, Gries 2001 on particle movement, Bresnan et al. 2007 on the dative alternation, and Bloem et al. 2017 on two-verb clusters in Dutch). In any case, the newer generative accounts do more justice to the complex reality of word order variation in Old English as evidenced in larger-scale corpus-based studies such as Bech (2001) and Heggelund (2010). We may conclude that a variety of word order patterns existed, with a tendency for V2 in main clauses and OV in subordinate clauses.

With its characteristic V2 and OV orders, Old English syntax is clearly radically different from the rigid SVO, i.e. verb-medial, order we find in Modern English. The following paragraphs will shed some light on the timing of the diachronic shifts that are generally referred to as the 'loss of V2' and the 'change from (predominantly) OV to (categorically) VO'.

While the histories of these structural shifts are closely intertwined, most scholars now differentiate between the two changes because their timelines do not fully overlap. In earlier work, the change from OV to VO was commonly characterized as a sudden and disruptive change in early Middle English. Lightfoot (1979,

1991), for instance, views it as an instance of abrupt grammatical reanalysis in the twelfth century. The more recent consensus is that there is in fact a good deal of OV/VO variation in Middle English, and that there is more continuity between the two periods than previously assumed (see, for instance, Pintzuk 1991; Fischer et al. 2000; Kroch and Taylor 2000; Pintzuk and Taylor 2006; Heggelund 2010).

In a corpus study on the development of word order in Old and Middle English subordinate clauses, Heggelund (2010: 124) demonstrates that the proportion of OV orders (as opposed to VO orders) decreases from 64% in late Old English over 38% in early Middle English to a mere 1% in late Middle English. These figures closely match the data presented in Pintzuk and Taylor (2006), who furthermore show that the proportion of OV is related to the type of object. Negative objects in particular still exhibit some amount of OV/VO variation in Middle English. Pronominal objects are also expected to exhibit a fair amount of variation between OV and VO (Elenbaas and van Kemenade 2014). A variety of other factors, linguistic as well as extra-linguistic, may have affected the rate and/or timing of the decline, including text form and language contact. It is found, for example, that OV is more persistent in verse (Fischer et al. 2000: 139) and that it was lost earlier in regions settled by the Scandinavians (Trips 2002).

The loss of V2 is usually situated later than the shift to VO. While it is often difficult to compare the reported rates of change, in part because of differing views as to what counts as a V2 pattern, the general picture that emerges is that there was a sharp decline in the fifteenth century (Görlach 1991; Fischer et al. 2000; Pérez-Guerra 2005; Warner 2007; van Kemenade and Westergaard 2012; Los and Starren 2012; Komen et al. 2014; Dreschler 2015). The decline continues into the early modern period. According to Fischer et al. (2000: 133), inversion is finally disappearing in the seventeenth century, possibly after a short revival in the sixteenth century. Today, V2 is largely restricted to clauses with *wh*- or negative elements in first position (10), a situation that is sometimes referred to as "residual V2" (Rizzi 1990). However, the idea that these two patterns have 'survived' into Present-Day English is not entirely correct. While *wh*-elements continue to trigger inversion after Old English, V2 after negative clause-initial constituents is lost in Middle English, only to be revived in the sixteenth century (see van Kemenade 1987: 180; Nevalainen 1997). Inversion after negative adverbials becomes obligatory in the seventeenth century (Görlach 1991: 108).

One should also bear in mind that when the subject and topic of the sentence coincide, as they often do, the resulting pattern (SVX) is the same in the early V2 system and the later SVO system. The change therefore primarily manifests itself in the behavior of topicalized objects and adverbials, which were initially attested with V2/XVS and V3/XSV orders depending on the properties of the subject, but come to be used exclusively with the verb-medial pattern. Crucially, these structural

changes restricted, widened or otherwise redefined the information-structural scope of clause-initial elements, the details of which will be discussed in Section 3.3.2. The changing mapping of syntax and information structure will turn out to be of central importance to the development of the passive in Early Modern English.

3.3.2 Interplay with information structure

In recent years, there has been an increased interest in the interaction of syntax and information structure in language change and language variation, as evidenced by several edited volumes (Hinterhölzl and Petrova 2009; Ferraresi and Lühr 2010; Meurman-Solin et al. 2012; Bech and Eide 2014; Los and de Haan 2017) in addition to an extensive list of papers, book chapters and dissertations on the topic (e.g. Bech 1998, 2001; Pérez-Guerra 2005; Seoane 2006; Los 2009, 2012; Westergaard 2009; Biberauer and van Kemenade 2011; Taylor and Pintzuk 2011; Los and van Kemenade 2012; Los and Starren 2012; Nevalainen and Traugott 2012: Ch. 62–68; Heggelund 2014; Dreschler 2015; Speyer 2015; Eckardt and Speyer 2016; Struik and van Kemenade 2018). This has led to a better understanding of word order variation in the early stages of English as well as a number of syntactic developments that take place in the aftermath of the loss of V2. The following is a summary of the main findings, with particular focus on V2.

Recall from Section 3.2 that information-structural distinctions and principles can be realized in various ways. We established that ordering information according to the given-before-new principle is a particularly effective way to achieve coherence in discourse. This is where syntax comes into play. Discourse entities and propositions are mapped onto specific constituents in a sentence, resulting in a linear configuration of information. But while information-structural needs may affect how constituents are ordered, syntax defines the range of grammatical possibilities and consequently the relative freedom with which constituents can be moved. Thus, when English developed into a strict SVO language, this had important consequences for the expression of information structure, which was organized rather differently in Old English.

It has been argued that the greater heterogeneity in Old English word order is the result of competing information-structural and syntactic demands (e.g. Bech 2001). Growing evidence suggests that certain word order patterns or tendencies are indeed motivated by distinctions relating to information structure, such as information status—the cognitive representation of discourse referents—and topic/focus relations. Taylor and Pintzuk (2012a,b, 2014) and Struik and van Kemenade (2018), for example, find that OV/VO variation in Old English correlates with the information status of the object. In the study by Struik and van Kemenade (2018), 98% of

preverbal objects are discourse-given; postverbal objects are far less homogeneous in terms of information status, including both new and non-heavy objects. This suggests that OV orders are only really possible when the object represents old information, whereas VO orders are more flexible in that regard. It is furthermore observed that the increasingly fixed position of the object is already starting to curtail the role of information status (Taylor and Pintzuk 2012b).

A similar information-structural distinction determines subject placement in clauses of the XVS and XSV type (V2/V3 alternation). It was indicated earlier that V3 orders are common with pronominal subjects, unless the initial element belongs to a restricted group associated with near-categorical V2, i.e. *wh-* and negated elements and adverbs like *þa* 'then' (see Section 3.3.1). Pronouns refer to discourse entities or propositions that are cognitively activated and highly salient at the time of utterance or recently mentioned in written discourse (see Gundel et al. 1993). XSV and XVS orders are thus associated with given and new subjects, respectively (see Kohonen 1978: 172–173). Corroborating evidence comes from studies by van Kemenade and colleagues (van Kemenade et al. 2008; van Kemenade and Milićev 2012; van Kemenade and Westergaard 2012), who show that also full NPs with specific anaphoric reference can occur in XSV patterns. This indicates that the motivating factor is indeed information structure and not merely weight (though newness and heaviness correlate).

Another line of research has linked V2 syntax to the expression of topichood. This connection first received considerable attention in research on second language acquisition (e.g. Carroll et al. 2000; Carroll and Lambert 2003; von Stutterheim and Carroll 2005, 2007, 2018), which demonstrated that the set of grammaticalized features in a language is linked to preferences in how speakers of that language select and structure information, for instance when narrating events. Comparing Modern German and English, Carroll and colleagues observe that speakers of German make fundamentally different choices concerning the macro- and microplanning in narratives, which they argue is driven by structural features in German that a language like English does not have. The V2 rule in German is singled out as the main structural difference, its function being to open up a special slot in the left periphery dedicated to the expression of topichood:

> The V2 constraint creates a 'slot' or "Vorfeld" (forefield) in main clauses, which, significantly, can accommodate only one constituent. Categories of information and syntactic constituents which map into the "Vorfeld" are prime candidates in the assignment of topic status in information structure. (Carroll and Lambert 2003: 269–270)

Importantly, this slot is not confined to one particular grammatical function, such as that of subject. Speakers of German may, and regularly do, assign topic status to

constituents other than the subject, including objects and adverbials (e.g. temporal and spatial relations). All of these constituents may be used as local links to the preceding discourse. The situation is quite different in Modern English, where topics map more directly onto the grammatical subject and the role of clause-initial objects and adverbials is more limited when it comes to establishing unmarked discourse links. Overall, the research by Carroll and colleagues has shown that the mapping of grammatical features and information structure is language-specific, that is, context-bound. Hence, this relation might be subject to change. The loss of V2 in English and its consequences for the expression of information structure is a case in point.

A detailed scenario of the changing dynamics between V2/SVO-syntax and information structure in English is presented in Pérez-Guerra (2005), Seoane (2006), Los (2009, 2012), Los and Starren (2012), Komen et al. (2014) and Dreschler (2015). Recognizing the importance of V2 in information organization, these scholars have fleshed out the idea presented above that the clause-initial position, demarcated by V2, has the information-structural function of marking topichood. The finite verb thereby signals the transition from old to new information (see also Hinterhölzl and Petrova 2010 on V2 in Old High German). Los (2009, 2012), Los and Starren (2012), Komen et al. (2014) and Dreschler (2015) have also identified a second, less prominent function of demarcating focus areas.

As to the first function, the clause-initial position is often described in terms of linkage, which, as we may recall from Vallduví and Engdahl's (1996: 461) definition above, is one of the main characteristics of topics: the topic of an utterance "anchors the sentence to the previous discourse or the hearer's 'mental world'". Various constituents (subjects, objects, adverbials) may serve as an unmarked discourse linker, see for instance the prepositional phrase *On þam* in (15), which connects the two sentences by a spatial relation, and also (4)–(6) supra.

(15) *Þa dyde man hig on cwearterne.* [...] *On þam wæs eac iosep gebunden*
then did they them in jail in that was also Joseph bound
'Then they put them in jail. [...] Joseph was also in that jail'
(cogenesiC:191; Komen et al. 2014: 83)

V2 triggered by *wh*-elements, negation and certain adverbials, e.g. (7)–(9), has been linked to the secondary function of the clause-initial position: the demarcation of foci.

Due to its multifunctional nature, the first position was an important vehicle for the expression of information structure in early English. In a way, the relative

flexibility of this system is licensed by other features of the grammar, in particular the deictic system paired with rich morphological inflection, which makes it easier to identify and track discourse referents (cf. Los 2012: 32–41 on the role of pronominal adverbs, gender and specific reference).

All of this goes to show that V2 syntax is intrinsically connected to information structure. Los (2012: 41) concludes:

> The crucial feature of verb-second syntax is not, in our view, the obligatory second position of the finite verb in the main clause, but the special character of the first position of that clause; it would be more accurate to describe this syntax as topic-first syntax rather than verb-second.

This topic-prominent V2 syntax is gradually replaced by one that is more subject-prominent. Subject-prominent languages prefer to construe sentences according to the subject/predicate relation rather than the topic/comment relation (Lehmann 1976; Li and Thompson 1976). The emergence of the subject requirement—the need to overtly express a subject—is indicative of such a switch. Evidence for the development of the subject requirement can already be found in Old English, which witnessed the gradual emergence of the formal subject *hit* in impersonal constructions (von Seefranz-Montag 1984). As V2 declines and the subject becomes more prominent, the scope of the preverbal material gets redefined. The various discourse functions of the first position are now distributed across the presubject and subject position; only the latter is pragmatically neutral (Los 2009: 118). Crucially, then, preposed objects and adverbials can no longer function as unmarked discourse linkers, which leads to increasing restrictions on their use in clause-initial position.

Speyer (2010: 27) tracks the rate of preposed direct objects of all transitive clauses in the Helsinki corpora up until the end of the early modern period. The results are plotted in Figure 3.1.

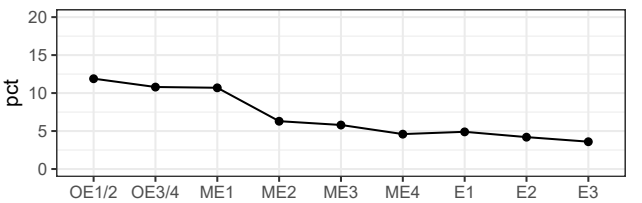

Fig. 3.1: Decline of direct object topicalization (based on Speyer 2010: 27)

Speyer's study attests to the continuous decline in direct object fronting. In Old English, about 12% of all transitive clauses have the object in clause-initial position; by the start of the Modern English period this number has declined to 3.6%. Pérez-Guerra (2005: 357) and Dreschler (2015: 304) also provide relative frequencies of topicalized constituents from ca. 1500 to the present day. These figures are hard to compare with Speyer's because they compute the percentage of a variety of clause-initial elements against the total number of clauses, rather than only transitive ones. But they do corroborate the finding that the overall rate of object fronting is very low after the loss of V2.

Pérez-Guerra's (2005: 357) study furthermore shows that fronted objects primarily represent old or accessible information ("referring" and "low-referring" in Pérez-Guerra's terms). The proportion of referentiality or givenness increased approximately 10% (from ca. 72% to 83%) between late Middle English and Present-Day English.[5] Because referentiality rates for subjects are markedly lower, Pérez-Guerra concludes that syntactically marked patterns, such as object fronting (OSV), are more strongly driven by information structure (given-before-new) than the canonical order (SVO). This is much in line with the observation that non-canonical word orders are associated with particular types of information status in Present-Day English, e.g. in constructions involving pre- or postposing, the pre- and postposed constituents represent old and new information respectively (Huddleston and Pullum 2002; Ward and Birner 2004).

The decline of clause-initial adverbials is less straightforward, presumably because they represent a rather heterogeneous set of elements. Dreschler's (2015: 304) corpus study confirms the general assumption that clause-initial adverbials have become less common. Figure 3.2 plots the percentage of adverbs and prepositional phrases with respect to the total number of clauses in the corpus. Note that Dreschler does not distinguish between complement and adjunct status of prepositional phrases.

Whereas the proportion of clause-initial PPs remains stable around 10%, there is a significant decline in the relative use of adverbs in first position (from approximately 20% to 10%). What these data do not tell us, is whether the rate of change is correlated with the adverbial's meaning. The distribution of Present-Day English adverbials across various positions in the clause (initial/medial/final) indicates that the first position might be more marked for specific types of adverbials. For example, Los and Dreschler (2012), in reference to Biber et al. (1999: 802–803), observe that time adverbials are fronted in 20% of the attestations (25% occur in

5 These percentages are an approximation based on the bar plot in Figure 5 (Pérez-Guerra 2005: 358); the figures themselves are not provided in the paper.

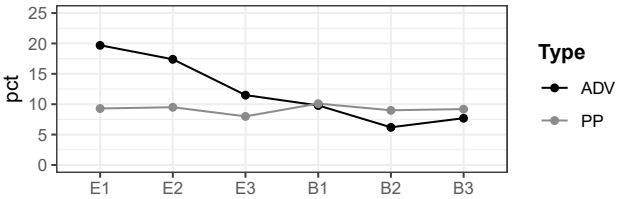

Fig. 3.2: Development of clause-initial adverbs and prepositional phrases (based on Dreschler 2015: 304)

medial position and 55% in final position); in clauses with place adverbials, by contrast, the rate of clause-initial placement is a mere 5%.[6]

Pointers as to the information status of adverbial phrases can be found in the corpus study by Pérez-Guerra (2005: 358), who distinguishes between adverbial complements (in which he includes prepositional objects) and adverbial adjuncts (modifiers). Complements score high on referentiality, much like the direct objects described above. Their relative stability may be contrasted with the development of adverbial adjuncts, which show a marked decrease in referentiality: in Present-Day English, adjuncts express new information ("non-referring" and "post-referring") more often than they did in late Middle English and Early Modern English.

These findings are related to a shift in the discourse functions of clause-initial adverbials. In Old English, they primarily served as local anchors providing explicit links to the preceding discourse (16), but they could also be used to convey a sense of contrast and as frame setters, e.g. (17) (Dreschler 2015: 242).

(16) *&* *þonne be norþan* *þæm* *Gandes* *muþan*, *þær* *þær*
and then to the north of the Ganges's mouth there where
Caucasis *se* *beorg* *endað* *neh* *þæm* *garsecge*, *þær* *is* *se* *port*
Caucasus the mountain ends near the ocean there is the port
Samera. ***Be norþan*** ***þæm*** ***porte*** *is* *se* *muþa* *þære* *ie* *þe*
Samera to the north of the port is the mouth of the river which
mon *nemneð* *Ottorogorre*
they call Ottorogorre
'And then to the north of the Ganges's mouth, there where Caucasus the mountain ends, near the ocean, there is the port Samera. To the north of

6 Lenker (2014) argues that the increase in medial placement of adverbial connectors such as *however* and *therefore* is a response to the loss of V2 and the fixation of SVO. In post-initial position, they highlight the clause-initial element (a subject or frame setter); in the other medial positions, they demarcate topic and focus domains.

the port is the mouth of the river which they call Ottorogorre.'
(coorosiu,Or_1:19.27.123-4; Dreschler 2015: 249)

(17) *On Easterdagum he wolde etan fisc gif he hæfde.*
on Easter-days he would eat fish if he had
'On Easter-days he would eat fish if he had it.'
(coaelive [Martin]:1267.6800; Dreschler 2015: 251)

The primary function of local anchoring becomes marginalized over time; links to time and space are now being expressed globally rather than locally and are more often left implicit (Los and Dreschler 2012). Recall that the multifunctional first position is replaced by two preverbal positions after the loss of V2. Clause-initial adverbials occupy the left-most position. Since the presubject position does not need to be filled, the constituents it accommodates are profiled and typically associated with a sense of markedness or contrast.

The main function that is left for clause-initial adverbials of place in Present-Day English is that of frame setting. Frame setters restrict the domain for which the following predication holds; they come with "a focus [...] that generates alternatives" (Krifka 2008: 270). An oft-cited example in the literature on the changing mapping of syntax and information structure in English is (18).

(18) a. *How is business going for Daimler-Chrysler?*
b. *[In GERmany]*$_{\text{Frame}}$ *the prospects are [GOOD]*$_{\text{Focus}}$,
but [in AMErica]$_{\text{Frame}}$ *they are [losing MOney]*$_{\text{Focus}}$.
(Krifka 2008: 269; cited in Los and Dreschler 2012: 864, among others)

The redefined discourse-structural scope of place adverbials could partially explain the loss of backwards referentiality found in Pérez-Guerra (2005: 358), and the accompanying increase of "post-referring" adverbial adjuncts: they no longer point toward the preceding discourse, but refer to what follows. Since adverbials of place no longer function as anaphoric links, speakers of Modern English tend to encode clause-initial places as entities (19b) rather than as spatial relations (19a) (von Stutterheim and Carroll 2018). When locations are represented by subjects, they can establish topical chains (Downing and Locke 2006: 229).

(19) a. *[On this plane]*$_{\text{Location}}$ *there are [huge rocks]*$_{\text{Entity}}$.
b. *You see him land on a new plane. [This plane]*$_{\text{Entity}}$ *is full of [huge rocks]*$_{\text{Entity}}$.
(adapted from von Stutterheim and Carroll 2018: 87–88)

The situation is arguably even more limited for instrumental adverbials, which do not readily qualify as frame setters. While instrumental phrases could still be used

as unmarked discourse linkers in the V2 system (20), speakers of Modern English need to resort to alternatives to achieve a similar lack of prominence of the first constituent, as illustrated in (21). Fewer restrictions are in place for time adverbials because they often fulfill the global topic condition for information progression, for instance in the narration of event sequences (von Stutterheim and Carroll 2018). In this type of discourse, temporal shifts are a relevant linkage strategy.

(20) *In þin tyme was founde [a gret summe of mony]$_i$ at Rome in a rotin wal* [...]. *[With þis mony]$_i$ þe pope ded renewe þe Capitol and þe Castell Aungel.* (cmcapchr:3763–8; Komen et al. 2014: 84)

(21) a. *[This money]$_i$ was used by the pope to renew the Capitol and the Castel Sant'Angelo.*
b. *[This]$_i$ is [the money that was used by the pope to renew the Capitol and the Castel Sant'Angelo].*
c. *The pope used [this money]$_i$ to renew the Capitol and the Castel Sant'Angelo.*
(Komen et al. 2014: 84)

The developments surrounding the loss of V2 have far-reaching effects on the subject as well. As exemplified by (19b) and the paraphrases in (21), the grammatical subject has become the preferred linking option, and it is the only constituent that can do so in a pragmatically neutral way. As a result, the subject acquires an ever-increasing share in clause-initial position in the centuries after the loss of V2. This is demonstrated in Figure 3.3, which plots the proportion of subject-initial main clauses from Early Modern English onward.

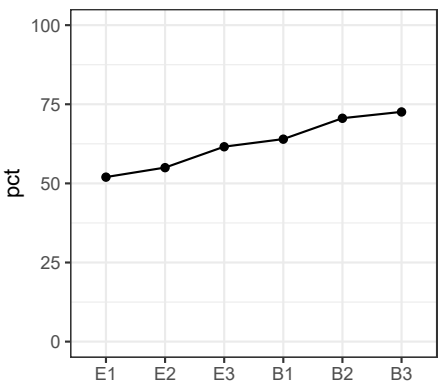

Fig. 3.3: The rise of clause-initial subjects (based on Dreschler 2015: 302)

Several studies have argued that the subject took on an heavier functional load as a result of the loss of V2 (e.g. Los 2009; Los and Dreschler 2012; Los and Starren 2012; Dreschler 2015; see also von Stutterheim and Carroll's (2005) comparison of Modern German and English subjects). In V2 systems with a dedicated linking position, the grammatical subject primarily serves to indicate the main participant. This functional division makes it comparatively easy for speakers to recover the protagonist when the subject is elided. When the rigidification of SVO sets in, the subject not only serves to encode protagonists, it also comes to be the default topic and the only unmarked discourse linker.

Komen et al. (2014) set out to quantify this claim and examined four hypotheses, the verification of which would be indicative of an increase in functional demands: (i) a decrease in subject ellipsis, (ii) an increase in subject-referent switching, (iii) a decrease in animate subjects and (iv) a decrease in presubject constituents with an unmarked link to the preceding discourse. All four predictions are borne out, though the second one calls for some qualification. Komen and colleagues observe an increase in subject-referent switching, but only in the transition from Old to Middle English; contrary to their expectation, the increase did not continue in the centuries afterwards, when V2 was lost. However, from Middle English onward the relative importance of zero-length chains grew, which means that the subject was increasingly used to encode one-time referents. It is the increasing functional demands on the subject that stimulated the growth and expansion of the passive construction in the history of English, which constitutes the topic of the following section.

3.4 The rise of passive constructions

3.4.1 Subject creation and other functions

The previous section ended with a description of how the subject's functional load increased over time. Initially there were few restrictions on the syntactic category that could fill the first slot to encode unmarked topics: V2 allowed for both subjects and non-subjects (e.g. objects and adverbials) to take on this role. In Present-Day English, by contrast, unmarked topics are strongly associated with grammatical subjects. The rise of the subject–topic correlation greatly reduced speakers' syntactic options to maintain given–new order in discourse, the subject now being the only neutral topic expression. As a result of the increased need for subjects, the semantic roles that can map onto the subject became less tightly defined, leading to an astonishingly wide range of non-agentive arguments that can surface as subjects. The sentences in (22)–(23) serve to illustrate the natural use

of non-agentive subjects and medio-passives (or middles) in Present-Day English (for details, see e.g. Rohdenburg 1974; Davidse and Heyvaert 2007; Hundt 2007).

(22) *This City View suite offers a unique view of the city of Myrtle Beach and sleeps up to 4 guests.*[7]

(23) *2017 saw the largest year-on-year growth in the sector since 2013, pulling in over $95bn (£67bn) worldwide* [...].[8]

Related to this phenomenon is the demise of "an earlier clean division between transitivity and intransitivity, with hitherto exclusively transitive verbs being used intransitively (e.g. *X sells the book* and *the book sells well*), and exclusively intransitive verbs being used transitively (such as the impersonal *like*)" (Hawkins 1986: 69). While van Gelderen (2011) argues that there are in fact quite a number of labile verbs in Old English (i.e. verbs that can be used both transitively and intransitively), she corroborates the claim that their number increases over time, and in a typological study Comrie (2006: 314) notes that the predominance of labile pairs in Present-Day English is "areally atypical". Importantly, this valency instability also affects subjecthood: it ensures that speakers can move the most suitable topical referent to subject position.

Another way to create non-agentive subjects is by means of the passive. The special connection between the grammatical subject and the passive is emphasized by Leiss (1992: 150), who characterizes the passive as a category that works for the subject ("Das Passiv ist eine Kategorie, die für das Subjekt arbeitet"). The subject orientation of the passive derives from its ability to create unmarked subjects; yet the passive possesses additional characteristics that make it a useful information-structural device. In general, the active/passive alternation allows speakers to render the same event from a different perspective, a choice that typically "involves the *relative topicality* of the agent and patient participants of the events" (Givón 1993: 47; emphasis in original). Passive constructions thereby serve multiple discourse-structural demands; they are used to promote a patient to a subject-topic, to omit unknown or irrelevant agents (short passives) or to maneuver new agents into focus position (long passives). These three main motivations for using the passive will be referred to as the passive's discourse-linking, impersonalization and information-rearranging function.

The discourse-linking function of the passive entails the transformation of a topical patient into the grammatical subject of a clause. That is, if in a certain state

7 Retrieved from http://www.southbayinnandsuites.com/rooms.

8 Retrieved from http://www.theguardian.com/fashion/2018/jan/19/its-in-the-jeans-us-fashion-goes-back-to-denims-glory-days.

of affairs the patient represents old information and the logical point of departure of the clause, the passive ensures that this semantic role can be mapped onto the grammatical subject. The unmarked subject then acts as an anaphoric discourse link establishing smooth transitions in discourse, either by linear progression or by maintaining topic continuity (see Section 3.2.2). Consider the following sentence, produced by a speaker of German in a writing assignment.[9]

(24) *Nun ist Bäumer tot. Ihn hat ein Scharfschütze erwischt.*
now is Bäumer dead him has a sniper caught
'Bäumer is dead now. He was killed by a sniper.'

The transitive event presented in the second clause involves the action of killing and the semantic roles of agent (a sniper) and patient (Bäumer), which in active clauses map onto the subject and object, respectively. Both the agent and the action represent new information, whereas the discourse referent Bäumer is salient and activated in the reader's mind because he was mentioned in the previous clause. In accordance with the principle of information flow, Bäumer represents the most logical point of departure for the second clause. In a V2 language like German and Old English, a patient-object can be moved to clause-initial position to establish a link to the preceding discourse. The minimal pair in (25) shows how both object fronting and passivization can create this information-structural effect.

(25) a. *Bäumer ← Ihn (hat ein Scharfschütze erwischt)*
b. *Bäumer ← Er (wurde von einem Scharfschützen erwischt)*

Due to the loss of V2 and the fixation of SVO, the first option is no longer available in English (26a); object fronting in itself remains a grammatical possibility, but the preposed constituent is pragmatically marked. Unmarked discourse linking is reserved for subjects.

(26) a. **Bäumer ← Him (a sniper killed)*
b. *Bäumer ← He (was killed by a sniper)*

The English translation of the Bäumer example (24) may further serve to illustrate the information-rearranging function of the passive, whereby the canonical order of the two major arguments is reversed. The labels 'information-rearranging' and 'argument reversal' have been used with particular reference to long passives, i.e. passives in which the logical subject is represented by a *by*-phrase. In the typical case, argument reversal occurs when the object-patient represents discourse-old in-

9 Retrieved from http://www.kgs-tornesch.de/dokumente/upload/d0bfc_im_westen_nichts_neues.pdf.

formation and the subject-agent discourse-new information. Passivization ensures compliance with the given–new principle. This information-structural constraint is relative rather than absolute in the sense that the subject in long passives must not encode information that is newer than the agent phrase (Ward and Birner 2004; Pullum 2014). Because new information receives end-focus, long passives are sometimes specifically exploited to give prominence to the agent (Pullum 2014: 71). The second clause in the Bäumer example, for instance, conveys the surprising information that Bäumer did not just die, but was killed by a sniper.

Several studies have explored the information-rearranging function in earlier stages of English. Seoane (2006) conducts a corpus study on the information status of subject and agents in long passives, the results of which are presented in Table 3.2. To sum up, 96.4% of long passives in Seoane's study comply with the relative information-structural constraint introduced above.

Tab. 3.2: Information conveyed by the subject and agent in long passives (Seoane 2006: 378)

	n	%
Given–new	283	64.3
New–given	16	3.6
New–new	105	23.8
Given–given	36	8.1
Total	**440**	**100**

In a smaller case study (n = 63), Dreschler (2015: 199) replicates the results for Old English: in 88.9% of the cases, the subject conveys information that is more given (47.6%) than that of the agent phrase or of equal status (41.3%). Dreschler notes that she excluded attestations in which the agent phrase preceded the subject from her set of passives. This is not justified because these are the very examples that would be expected to violate the information-structural constraint in long passives. It is plausible, then, that the actual proportion of new(er) subjects is higher than Dreschler's results suggest. In any case, the comparison of Old English and Early Modern English long passives are indicative of a growing establishment of the information-rearranging function of the passive, with the given–new order becoming more systematized (cf. 47.6% in Old English vs. 64.3% in Early Modern English). This tendency seems to be confirmed by the proportional increase of long passives with respect to all passives, from roughly 10% in Old English (Dreschler 2015: 198) to 15% in Middle English and Early Modern English (Seoane 2006: 372) and 20–30% in Present-Day English (Toyota 2008: 11).

The third major function of the passive, impersonalization, is linked to short passives, i.e. passives without a *by*-phrase. While short passives may be motivated by the desire to topicalize a given patient (see the discourse-linking function described above), the omission of the agent is also a desirable option in many communicative contexts, including but not limited to information-structural motivations. Haiman (1976: 50), for example, considers agent omission the passive's "original raison d'être". Situations in which the speaker might want to omit the agent include the following:

> The Agent is implied by the nature of the verb, but is unknown **1**; anaphorically predictable **2**; predictable by general knowledge **3**; universal or general **4**; irrelevant at this point in the discourse **5**; deliberately silenced in order to avoid giving or taking blame or responsibility **6** or to maintain privacy **7**; finally, recoverable as the author of the text [...] **8**. (Downing and Locke 2006: 254–255)

It should come as no surprise that short or agentless passives represent the vast majority of attested passives. The effect is found in both written and spoken language, but is most clearly pronounced in the latter. As mentioned above, corpus studies on written language report a share of 20-30% for long passives; in spontaneous speech, long passives account for merely 1 to 2% (Weiner and Labov 1983: 34, and references therein). Within the written mode, substantial differences can be found between individual genres. Long passives are generally favored in the more formal written genres, whereas they make up a considerably smaller portion in speech-like text types. In Seoane's (2006: 372) study covering Middle and Early Modern English, the share of long passives ranges between 7% and 52% in the genres fiction and law, respectively. This signifies that "the passive as an argument-reversing strategy is more relevant in formal, informative texts, while the use of the passive as a means of eliding a non-topical agent seems to be more prominent in imaginative text types" (Seoane 2006: 372).

There is also a fascinating historical dimension to the role of the passive as an impersonalization strategy. In former times, a central role in impersonalization was imparted to the indefinite human pronoun *man* 'one', but it became obsolete in the course of the Middle English period (Rissanen 1997; Los 2002).[10] It is important to note that the impersonal reference of *man* is not entirely synonymous with impersonal uses of pronouns such as *you* and *they* in Present-Day English: the latter evoke the inclusion or exclusion of discourse participants (speaker/hearer), whereas such functional constraints do not apply to *man* (Haas 2018: 174–175; this contrast is also found in other Germanic languages, see Coussé and van der

10 The pronominal status of *man* is contested, see van Bergen (2015) for an overview.

Auwera 2012). In other words, the indefinite pronoun *man* evokes an agent that is maximally non-referential; it diverts the attention from the agent to another element in the clause that is more salient and more likely to be recovered in the ensuing discourse. Because of its weak referential properties, *man* has been called "the most indefinite" pronoun within the *some/any* paradigm (Rissanen 1997: 514). A typical example is presented in (27).

(27) *Her onginneþ seo boc þ man Orosius nemneþ*
here begins that book that one Orosius calls
'Here begins the book that is called Orosius.'
(Orosius, 1; Haas 2018: 174)

The reasons for using the indefinite pronoun *man* are very similar to the motivations for agent omission in short passives quoted supra from Downing and Locke (2006). This functional equivalence is corroborated in comparative studies that investigate languages with a different distribution of impersonalization strategies. Siewierska and Papastathi (2011: 595), for example, note that the translator-linguists who were asked to translate some instances of English passives would sometimes resort to the use of impersonal pronouns in the target language (e.g. Italian *si*, French *on*, German *man*). Altenberg (2005: 104) demonstrates, on the basis of the English-Swedish Parallel Corpus, that Swedish *man* may be rendered in a variety of ways in English; the agentless passive is the second most frequently used strategy, accounting for 14% of the translations (after *you* with 25%). Qualitative and quantitative studies have furthermore shown that English has a greater propensity for "passive perspectives" than German, which relies more heavily on active clauses with indefinite *man* (e.g. Doherty 1996; Johansson 2007: Ch. 10). An interesting historical comparison can be found in Light and Wallenberg (2015). Light and Wallenberg examine three versions of the *Rule of St Benedict* representing different varieties of English. The variety that had already lost *man* (the Southern Middle English translation) exhibits a higher proportion of passives than the dialects that had retained it at the time of writing (the Old English and Northern Middle English translation).

The demise of *man* in Middle English represents both the loss of a subject expression and the loss of a key impersonalization strategy. As a result, other impersonal expressions became more common. Most notably, *one* developed indefinite and generalized uses in the fourteenth and fifteenth century (Fischer 1992b: 224), and *they* was also increasingly used to refer to indefinite human subjects (Mustanoja 1960: 226). As a subject-creating and impersonalization strategy, the (agentless) passive echoes the dual functionality of *man*, providing the speaker with another means to counterbalance its loss.

3.4.2 Constructional change

The previous paragraphs have laid out a scenario in which the passive, for various communicative and information-structural reasons, gained importance in the history of English. The Early Modern English period is generally considered to be of key interest to this development, as the ramifications of the structural changes in Middle English began to manifest themselves. Among other developments (e.g. clefts, *do*-periphrasis), gains are found in the domain of passives, as demonstrated in a corpus study by Seoane (1999, 2006). Table 3.3 presents the proportion of active transitive and passive clauses, combining Seoane's results for the late Middle English and Early Modern English period.

Tab. 3.3: Distribution of active transitive and passive clauses in Late Middle English and Early Modern English (based on Seoane 2006: 371)

	Active (%)	Passive (%)
M4	82	18
E1	79	21
E2	78	22
E3	76	24

Seoane's (1999, 2006) data are based on a sample of the Helsinki corpus for six selected genres (statutes, science, personal letters, sermons, drama and fiction). The results are verified in a larger-scale study by Dreschler (2014) that spans the Middle English, Early Modern English and Modern English periods and is based on the entire Penn-Helsinki parsed corpora for these periods. Dreschler records a continuous increase in the proportion of passives, from 17% in Middle English to 21% in Early Modern English and 25% in Modern English. However, individual subperiods show fluctuations, so that the incremental growth for the early modern period (Table 3.3) could not be verified for the entire corpus, unless the same six genres as in Seoane's study were selected. Notwithstanding the passive's genre sensitivity, these studies corroborate the rise of the passive in Early Modern English.

Seoane (2006), Los (2009) and Dreschler (2014, 2015) connect the growing rate of passivization to the loss of V2 as outlined in Section 3.3.2, highlighting the changing information-structural demands. Light and Wallenberg (2015: 227) criticize this proposal and argue instead that the increase is "not directly related to the presence or absence of a V2 grammar, but rather due to the availability (or absence) of different strategies of forming impersonal clauses". While I agree that the lack of a dedicated impersonal strategy (such as *man*) might have prompted the

frequency increase of passives, the evidence they present to refute the claims that Seoane (2006) and Los (2009) have made is not convincing. On closer inspection, it does not require too much effort to align their results with the information-structural account presented by Seoane and others.

Let us take a closer look at the evidence. Light and Wallenberg compare three sixteenth-century translations of the New Testament; the English translation is by Tyndale, the German translation by Luther and the Icelandic one by Gottskálksson. German and Icelandic, both V2 languages, show significantly lower rates of the passive: 6.2% and 7.4% respectively, against 11.2% in the English translation. Among other things, passives in Tyndale's version (28a) may appear as reflexives in German (28b) or as *-st* middles in Icelandic (28c).

(28) a. *and they came and were baptized* (Tyndale)
b. *vnd sie kamen dahynn vnd ließen sich teuffen*
and they came there and let REFL baptize
'And they came there and had themselves baptized' (Luther)
c. *Þeir komu þangað og skírðust*
they came thence and baptized-MID
'They came there and were baptized' (Gottskálksson)
(John 3: 23; Light and Wallenberg 2015: 239)

Similarly, Light and Wallenberg find the lowest rates of passivization in dialects or varieties of English with a strong V2 grammar. These are also the varieties were *man* is still used. While these two case studies show a correlation between V2 and the rate of passivization (pace Seoane 2006; Los 2009; Dreschler 2014, 2015), Light and Wallenberg argue that the availability or lack of impersonal strategies is the confounding factor.

The discussion then essentially boils down to the age-old debate on what constitutes the most basic function of the passive: agent demotion (impersonalization and de-topicalization) or the promotion of a non-agent (topicalization) (see Haspelmath 1990 and references therein). From a discourse-structural point of view, these distinct functional domains represent two sides of the same coin. Whichever motivation is more prominent (if at all) is context-bound and does not apply across the board, that is, we should not regard one function as a "purely 'opportunistic' side-effect" (contra Blevins 2003: 9). Note that Siewierska (1984: 218) mentions both the "lack of alternative topicalization and impersonalizing strategies" to account for the frequent use of passives in English. The diachronic picture presented in this section underscores Siewierska's point, having demonstrated that the passive does (at least) double duty when systemic change sets in. The first key function is to align information-structural and grammatical demands after

the loss of V2 and subsumes 'discourse-linking' (by creating unmarked subject-topics) and 'information-rearranging' (by creating a given–new order). These cases typically apply when the syntactically unmarked active pattern would violate the given-before-new principle. Second, the passive makes up for the loss of the main impersonalisation strategy *man*. The rise of the passive cannot be satisfactorily explained by ignoring either one of these developments.

The gains in the passive domain reach further than the distributional shifts and frequency increases described thus far. In Figure 3.4, the upper level represents the canonical passive construction formed by a subject, a form of *be* and the past participle of a transitive verb. The daughter nodes represent the expansion that occurs at the construction-internal level, resulting in the creation of new construction types.

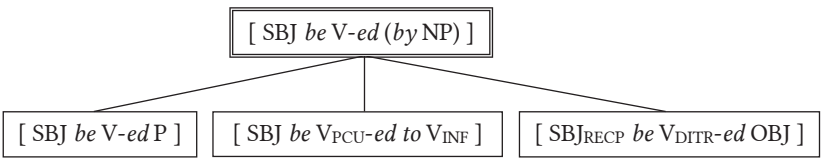

Fig. 3.4: Passive constructions

The passive prototype is formed by a subject, a form of *be* and the past participle of a transitive verb. As mentioned above, the *by*-phrase is optional, and typically only occurs when there is a specific reason for it, for instance, when it conveys important or surprising information.

Variation is not limited to the short/long passive alternation. In line with prototype theory, the other slots in the passive construction exhibit radial behavior, too. Consider the following examples, taken from Pullum (2014).

(29) a. *That said, however, Korea is Korea, not the Philippines.*
b. *The government had the case investigated by the police.*
c. *He even got appointed to a coveted civic post.*
d. *Being attacked by a shark is no fun.*
e. *This rug badly needs washing.*

The auxiliary *be* is omitted in bare passives (29a) and embedded passives (29b); other passives are formed with *get* (29c). There are subjectless passives (29d) and passive constructions with a gerund participle instead of the distinctive past participle (29e). These deviations from the passive prototype echo ideas captured in

Hopper's (1987: 150) statement that "the more useful a construction is, the more it will [...] serv[e] as a basis for variation and extension".

Three extensions of the passive construction deserve particular attention in our historical treatment of the rise of the passive in Early Modern English. Due to their typological peculiarity as well as their fascinating historical development, these passive construction types have often been singled out in the literature to comment on the exceptional status of the passive in English. They are referred to in this work as the prepositional passive, the NCI construction (for *Nominativus cum Infinitivo*)[11] and the recipient passive, respectively, and are represented in Figure 3.4 as separate construction types. Instantiations of each of these patterns are given in (30).

(30) a. *He was laughed at.*
b. *He was believed to be a thief.*
c. *He was given a second chance.*

The sentences above showcase the greater tolerance for passives with atypical subjects. In the corresponding active clauses, the passive subject would be rendered as the object of a preposition (30a), the subject of an infinitival clause following a two-place PCU (*perception/cognition/utterance*) verb[12] (30b) or the indirect object of a three-place verb (for a detailed analysis of the first two constructions, see Chapter 4). While the special passives are first attested in Middle English, it is the increased need for subjects in Early Modern English (as discussed above) that secures the long-term consolidation of special passives in English grammar (cf. Los 2005, 2009; Seoane 2006, 2009; Dreschler 2015; Petré 2018). Drawing on recent insights from the field of diachronic construction grammar, I will argue that these 'special' passives are instances of category-internal change in the sense of Coussé (2018).

In a recent paper, Coussé et al. (2018) extend the classic grammaticalization concept of 'host-class expansion' (Himmelmann 2004) to constructional change, coining the term 'host-class construction'. A host-class construction, on this view, is a semi-schematic construction, "where the grammaticalizing element(s) constitute(s) the substantive element(s) of the construction and the emerging host-class forms an open slot or schematic position for lexical elements collocated with the grammaticalizing element(s)" (Coussé et al. 2018: 5). The host-class is argued to

11 The NCI construction is also known as a specific type of raising, the passive of the ECM-construction (*Exceptional Case Marking*) or as VOSI (*Verb–Object/Subject–Infinitive*).
12 The term 'PCU' stems from Givón (2001).

be internally structured as a prototype category; as a result, host-class expansion represents a form of category-internal change (Coussé 2018).

The model proposed by Coussé (2018) and Coussé et al. (2018) offers a novel perspective on the extension of the passive construction within its syntagmatic context. The relevant host-classes collocationally defined by the passive construction are the subject and the past participle. These schematic positions are internally structured as a prototype category, which entails that extensions are expected to occur according to recurrent processes defined in prototype theory. Coussé (2018) refers to Geeraerts's (1997) work in cognitive lexical semantics, which provides a number of generalizations regarding semantic change that can be applied to host-class expansion. More specifically, it is argued that semantic extensions of lexical items originate from the prototypical center and that "the further the expansion extends, the fewer features the peripheral cases will have in common with the prototypical centre" (Geeraerts 1997: 24). Similar processes can be assumed to have affected the passive construction and eventually gave rise to the three construction types presented above. It needs to be emphasized that the emergence of these passives in all cases represents a multi-faceted development, made possible by multiple analogies or changes elsewhere in the grammar; Chapter 4 presents an in-depth discussion of these factors.

At this point, however, the observed time lags between various changes in the passive might strike one as particularly revealing in light of the prototypical structure of categories in host-class constructions. First, the prepositional passive (30a) was attested more than a century earlier than the NCI construction (30b) and the recipient passive (30c). Thus, whereas the prepositional passive was first found in the first half of the thirteenth century and is considered to be well established by 1400, the NCI and recipient passive only began to appear in the late fourteenth century (cf. Warner 1982; Denison 1985; Allen 1995; Dreschler 2015). Consider the schematic positions in the canonical passive. The subject represents a patient or theme and the past participle belongs to the class of transitive verbs. If host-class expansion is anything like the processes described by Geeraerts (1997) for cognitive lexical semantics, we would expect it to be a gradual process, whereby the first extension will be a deviation from the prototypical center that might pave the way for additional extensions that are further removed from it.

Viewed in this light, the earlier occurrence of the prepositional passive is not surprising. Compare the pronoun *he* in the three sentences in (30). In the prepositional passive, *he* denotes a discourse referent who is the object of ridicule or mockery, much in line with the semantic role of patient. In fact, the relation established by the verb-preposition collocation and the subject can hardly be discerned from that of a single verb equivalent such as *ridicule*. The subject, then, does not deviate semantically from the prototype; rather, the category-internal

change originates in the participle slot, which increasingly accepts verbs that represent formal deviations but resemble transitive verbs in other respects (for a discussion of the role of entrenchment, see Section 4.2.4). The NCI and the recipient passive, on the other hand, accommodate subjects that cannot readily be aligned with the patient role and therefore represent true semantic extensions of the subject slot. Recipient passives feature subjects that denote a special kind of goal associated with a change in ownership, a relation that is typically expressed by the indirect object in active clauses. The passive subject in the NCI cannot be viewed as the complement of the matrix verb; in (30b), the underlying object of *believe* is not *he*, but the whole proposition ([*that he is a thief*] *is believed*).

The second historical fact concerns the development of complex prepositional passives, that is, prepositional passives containing an interceding element in a V-X-P configuration. The first examples date from the fourteenth century for nominal X-elements (31b) and the sixteenth century for adverbial X-elements (31c), and they only really appear to become productive in the early modern period (cf. Visser 1973: 2133–2136; Denison 1993: 153–155).

(31) a. *He was laughed at.*
b. *He was made fun of.*
c. *He was cried out on.*

The emergence of complex prepositional verbs in the prepositional passive (including verbo-nominal combinations and phrasal-prepositional verbs) can be thought of as a secondary extension in a chain of derivations, which is supported by their late appearance. Considering the course of category-internal change, it is inconspicuous that simplex prepositional passives (31a) should predate complex ones. However, it is an important argument in support of an analogical account of change and against some of the rule-based, transformational accounts proposed in the generative literature (e.g. Lightfoot 1979).

Another subtype of the prepositional passive is exemplified in (32). This peripheral type of passive is a fairly recent phenomenon, going back to the nineteenth century; potential forerunners are attested earlier, in the sixteenth century (Visser 1973: 2125, 2129).

(32) *This bed has been slept in.*

The V-P combination represents a strong deviation from the prototypical transitive verb, and therefore an unlikely extension from the perspective of prototype theory. Prepositional passives are indeed "not generally admissible" in cases where the preposition is not selected by the verb and the prepositional phrase is adjunct-like (Huddleston and Pullum 2002: 276). When they do occur, they are subject to specific

semantic-pragmatic constraints. The most commonly mentioned generalization is 'affectedness' (cf. e.g. Bolinger 1975; Riddle et al. 1977; Sinha 1978; Davison 1980). This principle entails that the passivization of V-P combinations like *sleep in*, which typically establish a locative relation, is more acceptable when the passive subject denotes an entity that has undergone a change of state. For example, a bed that has been slept in has visible signs of alteration (e.g. wrinkled sheets), whereas it would remain unaltered if someone slept near or under it. Passivization of unprototypical V-P combinations, in other words, is only licensed if the passive subject receives the appropriate thematic role (cf. the patient-like reading of *this bed*), creating a conceptual link with the canonical passive.

The third piece of evidence for the gradual extension of the passive construction comes from the development of recipient passives. There is a perceivable yet slow increase of the recipient passive in the early modern period (Seoane 1999). Ditransitive verbs in this period notably still yield two types of passives, as illustrated for *tell* in (33).

(33) a. *Come on fellow it is tolde me thou art a shrew iwysse*
(IQE1_XX_COME_STEVENS: 54; Seoane 1999: 131)
b. *I was told this day that the heralds had yet a quarter of their work to do*
(IQE3_XX_CORP_ANHATTO: 98; Seoane 1999: 131)

Passivization of the direct object still prevails in the early modern period, though there is a pronounced decline between the beginning and end of the period, from 91% to 72%, in favor of the recipient passive (Seoane 1999: 131). Note in this respect that the earliest examples in the Middle English section of the Helsinki corpus, as provided by Dreschler (2015: 146–147), seem to belong to a particular type of ditransitive. All but one of the examples listed by Dreschler are ditransitive verbs such as *pay* and *serve* that can omit both their direct and indirect object (e.g. *they paid him* vs. *they paid 2,000 pounds*). Allen (1995: 394) has also noted that recipient passives with *give* (i.e. a type of ditransitive that cannot omit its direct object) occurred later than those with *pay*. While these findings are consistent with the previous claim, the evidence is too sparse to be conclusive.

Overall, the discussion of the historical facts has demonstrated that the spread of the special passives can be understood in terms of host-class expansion, whereby the schematic positions in the passive construction are widened in scope. In line with prototype theory, it was found that the categorical extensions of the passive construction proceed in an incremental fashion: constructional subtypes that resemble the canonical passive appear earlier in time than more peripheral ones.

3.5 Conclusion

The present chapter has elaborated on the expansion of the passive construction in Early Modern English against the background of long-term processes of systemic change, in particular the interaction between syntax and information structure in early English. Old English had comparatively free word order, which made it easier for speakers to arrange constituents in accordance with the given-before-new principle. An important function of the clause-initial position, which was demarcated by V2, was to link the clause to the preceding discourse. Within the clause, the transition from old to new information was signaled by the finite verb. Contrary to Modern English, there were few syntactic restrictions on the constituents that could fill the first slot: both subjects and non-subjects (e.g. objects and adverbials) could encode unmarked topics.

The Old English system was radically restructured as English gradually lost the V2 rule and word order became increasingly fixed. As a result, unmarked topics came to be more strongly associated with grammatical subjects, which limited speakers' syntactic options to maintain given–new order in discourse. This increased the functional demands on the subject and created the need for subject strategies, e.g. constructions that can turn non-agentive discourse referents into subject-topics. This is where the functionality of the passive comes into play. By altering the relative topicality of the main participants of an event, passives may serve various interrelated discourse-structural functions, including discourse-linking (promoting a given patient to subject position), impersonalization (omitting unknown or irrelevant agents in short passives) and information-rearranging (argument reversal in long passives).

The frequency increase of the passive in Early Modern English thus fits a broader picture of system change, where losses in one area of the grammar are counterbalanced by growth in other domains. The rigidification of SVO had created an environment which promoted not only the use of the regular passive, but also facilitated the spread and consolidation of the special passives, which were analyzed as instances of category-internal change.

4 The development of special passives

4.1 Introduction

The previous chapter elaborated on the rise of the passive in light of the historical changes English underwent, which involved the decline of the verb-second rule and the fixation of SVO word order. It provided the larger, systemic context in which the passive could expand to new construction types, including the prepositional passive, recipient passive and NCI construction. The present chapter complements this macro-level view by detailing the individual histories of the NCI and prepositional passive, paying particular attention to the linguistic environments in which these constructions arise. Section 4.2 discusses the origins and spread of the prepositional passive; Section 4.3 does the same for the nominative and infinitive. It is shown that the novel structures emerge in a non-disruptive manner, drawing on analogies with existing patterns.

4.2 History of the prepositional passive

4.2.1 Preliminaries

This section examines the multi-faceted linguistic developments that have led to the syntactic innovation customarily referred to as the "prepositional passive" or the "pseudo-passive". Prepositional passives have been defined as passive constructions whose subject corresponds to the logical complement of a stranded preposition. The sentences in (1) exemplify the main types that can be distinguished.

(1) a. *The problem has been dealt with.*
b. *This bed has been slept in.*
c. *It has been taken care of.*
d. *Human life in those days was thought little of.*
e. *They are cried out against.*

The first two sentences instantiate the basic structural pattern, differing solely as to whether the preposition is considered to be obligatorily selected by the verb. The remaining examples illustrate complex patterns with a nominal (1c), adjectival (1d) or adverbial (1e) element interceding between the verb and the preposition.

Typologically, the prepositional passive is a unique phenomenon, being attested in only a handful of languages other than English, including Norwegian,

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Swedish, Danish, Vata, Gbadi and Prince Edward Island French (cf. Koopman 1984; Siewierska 1984; Truswell 2009; Klingvall 2012; Engdahl and Laanemets 2015; Findlay 2016). The occurrence of the prepositional passive has long posed a challenge to syntactic theory, which has resulted in a large body of literature, mostly focused on synchronic usage (see Anthonissen 2020b: 94 for an overview). This section centers on the prepositional passive's diachronic development, though insights concerning the current state of prepositional passives may also feed into the analysis of older examples. Section 4.2.2 provides an overview of the construction's early development, highlighting in particular its rapid spread in Early Modern English. Linguistic proposals concerning this remarkable development are examined in Section 4.2.3, which tries to capture the complexity of the innovation and demonstrates that both structural and functional factors are necessary to account for the conundrum that is the prepositional passive.

4.2.2 Prepositional passives in early English

Historical analyses of early texts have amply demonstrated that the English language did not have any of the structural patterns exemplified in (1) before the Middle English period (e.g. van der Gaaf 1930; Visser 1973; Denison 1985; Thornburg 1985; Dreschler 2015). The prepositional passive first started to appear in the thirteenth century (Denison 1993: 125).[1] Denison (1993: 125–129) records 39 examples in texts that were composed before 1400. Strikingly, these examples instantiate 24 different V-P combinations, some of which are illustrated below. This count includes four examples with P-V order (e.g. *X is of spoken*), a structure that gradually disappears at the expense of postverbal placement (e.g. *X is spoken of*).

(2) *Litel is he louid or* ***lete*** ***by*** *þat suche a lessoun techiþ*
little is he loved or thought of who such a lesson teaches
'He is little loved or valued who teaches such a lesson'
(c1400 (a1376) PPl.A(1) 11.29; Denison 1993: 126)

(3) *how worthy it es to ben* ***wondrid upon***
how worthy it is to be wondered at
'How worthy it is to be wondered at'
(?a1425 (c1380) Chaucer, Bo. 4.pr1.22; Denison 1993: 126)

1 No strong consensus exists regarding the exact timing of the first recorded instances, with potential candidates dating back to as early as the first half of the thirteenth century (Visser 1973: 2122; Denison 1993: 125) or as late as the middle of the fourteenth century Dreschler (2015: 112). See Anthonissen (2020b: 94–97) for a discussion.

Denison (1981, 1985, 1993) suggests that the prepositional passive may have spread via lexical diffusion, as one third of early prepositional passives belong to a cluster of closely-related verbs around *leten of* 'regard, esteem, think of'. However, for Dreschler (2015: 116) the variety of types attested in the early material is reason to believe that the emergence of the prepositional passive "was truly a syntactic, i.e. structural innovation rather than one limited to one group of verbs as previously suggested by Denison (1985, 1993)".

Over the course of the following centuries, the prepositional passive established itself as a core grammatical pattern. Figure 4.1 plots the type and token frequencies provided by Visser (1973: 2120-2133) (right panel) and Dreschler (2015: 353) (left panel), which attest to the rapid spread in Early Modern English. Drawing on Dreschler's (2015: 353) counts in the PPCEME (1500–1710) and the PPCMBE (1700–1914), the left-hand panel in Figure 4.1 visualizes the normalized token frequency of the prepositional passive from the beginning of the early modern period until the beginning of the twentieth century, during which period the prepositional passive quadruples in frequency (n = 451). The acceleration is particularly noticeable in the early modern period, after which token frequencies remain stable for little more than a century only to rise again toward the beginning of the twentieth century.

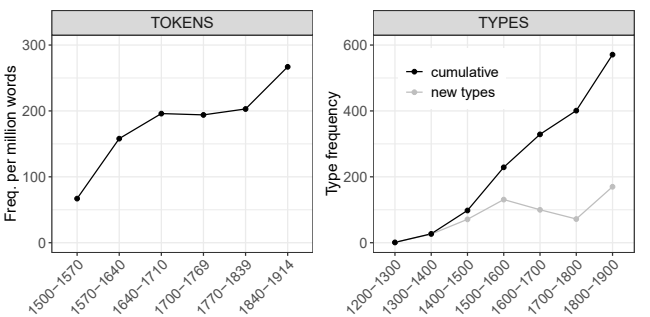

Fig. 4.1: Type and token frequency of the prepositional passive (based on Dreschler 2015: 353 (left); Visser 1973: 2120-2133 (right))

Type frequency, which can be conceived of as a proxy for productivity (see Bybee 1995; Bybee and Thompson 1997; Barðdal 2006), appears to grow at a steady pace as well. The right-hand panel in Figure 4.1 visualizes the raw number of new prepositional verbs (i.e. types) that Visser lists for each century. The grey line plots the absolute number of new types in each period, the black line the cumulative count (glossing over the possibility that some types might have become obsolete). An obvious caveat with these data is that they merely give us an impressionistic

idea of the construction's increasing type frequency because the counts are not normalized (no information is available on the corpus size for each period).[2] In other words, the increase in type frequency could just reflect increasing corpus sizes for later periods. With no information on the number and length of texts consulted, I cannot confirm nor refute this possibility. Yet, the increase would be in line with observations about the rise of the prepositional verb in Early Modern English (see Denison 1985: 201–202; Denison 1993: 143) that would positively affect the number of types occurring in the passive as well. Dreschler (2015: 355) registers 249 different prepositional verbs among the 451 attestations she found in the corpora of Early Modern and Modern English and notes that the range of verbs is slightly wider in the latter period (it is unclear whether the difference is significant because the counts for individual subperiods are not given). In Present-Day English more than a thousand different verbs may occur in the prepositional passive (cf. Couper-Kuhlen's (1979: 129–203) index of prepositional verbs).

Another aspect concerning productivity is the construction's extension to more complex types, involving an interceding element in a V-X-P configuration (e.g. *set fire to*, *take heed to*, *go through with*, *cry out on*). Even though such complex multi-word units or idiomatic phrases were not rare in Middle English (Claridge 2000: 89–96), their appearance in prepositional passives does not proceed simultaneously with that of regular V-P units. Only in the fifteenth century, about 150 years after the first occurrences of the regular prepositional passive, does the prepositional passive extend to more complex multi-word units (Visser 1973: 2133–2136; Denison 1985: 202). Initially, the complex prepositional passive seems to remain a relatively marginal phenomenon: of the 52 early modern prepositional passives Seoane (1999: 136) investigates, only one is a complex prepositional passive.

Complex prepositional passives are first found with nominal elements, the first safe example being (4). Phrasal prepositional passives, i.e. the type with an adverbial element, arrive on the scene much later. Visser (1973: 2135), for instance, cites one sixteenth-century example and two seventeenth-century ones. The sixteenth-century example, however, is highly doubtful and of the two other early modern attestations one is not a prepositional passive.[3] The remaining pre-1800 attestation is given in (5).

2 A more reliable visualization of increasing type frequency for the seventeenth and eighteenth centuries is provided in Chapter 6.

3 The sentence in (i) involves preposition stranding triggered by the *wh*-context, but does not constitute a prepositional passive. The fifteenth-century example in (ii) does appear to be a genuine prepositional passive, but the trouble here is that the original manuscript is hard to read and the word *away* is a guess by the editors; also, the source is a transcription from 1612 (Peter Petré, p.c.; see also Kirby 1996: 19, 152).

(4) *and þes oþer wordis of þis bischop ou3te to be* ***taken hede to***
and these other words of this bishop ought to be taken heed to
'And these other words of this bishop ought to be taken heed to'
(?c1450 (?a1400) Wycl. Clergy HP 369.1; Denison 1993: 154)

(5) *if their Neighbors will not follow their example, [...] they shall be* ***cryed out on*** *for disaffected*
(1662 Patrick, Latitude-Men 12; Visser 1973: 2135)

Overall, the data adduced in this section attest to the remarkable rise of the prepositional passive in English, with ever increasing token frequencies of the pattern in the period of investigation. Philological treatments and corpus studies are furthermore indicative of increasing productivity, as the range of prepositional verbs extends to new meanings and new syntactic types (the complex prepositional passives). Even though the new syntactic pattern shows some signs of productivity early on (for instance, its ability to combine with various prepositional verbs), its extension to more complex multi-word units is a gradual one that stretches well into the Modern English period. The changes are part of a multi-faceted, systemic change affecting various parts of the grammar and it is a challenge to disentangle those factors when it comes to the proliferation of the prepositional passive. In what follows, I discuss the various accounts that have been proposed to account for the construction's rapid rise in English.

4.2.3 Structural and functional explanations

4.2.3.1 Reanalysis

The developmental path of the prepositional passive has been the object of much controversy, yet if there is one connecting thread to be found, it must be the notion of reanalysis, which most treatments have relied on as an explanatory factor for the occurrence of prepositional passives.

Often considered one of the prime language-internal mechanisms of syntactic change (e.g. Harris and Campbell 1995; Hopper and Traugott 2003; Traugott and Trousdale 2010, 2013), reanalysis is defined as a "change in the structure of an expression or class of expressions that does not involve any immediate or intrinsic

(i) *What have you been* ***bred up to****, sirrah?*
(1690 Dryden, Don Sebastian II, ii; Visser 1973: 2135)

(ii) *There was a servant of yours, and a kynsman of myne, was myschevously* ***made away with****.*
(1502 Townley, Plumpton Correspondence 164; Visser 1973: 2134)

modification of its surface manifestation" (Langacker 1977: 58). While the specifics of theoretical treatments of the concept of reanalysis may differ substantially, there are a number of characteristics, some apparent in Langacker's definition, some introduced in other work, that have come to be widely accepted. In particular, it is assumed that reanalysis operates syntagmatically and takes place when an alternative grammatical structure is assigned to an existing representation. Reanalysis presupposes surface ambiguity in the input structure, proceeds abruptly and is covert, though changes in surface structure may manifest themselves later when the construction behaves in ways that are only reconcilable with the new structure (cf. Harris and Campbell 1995; Langacker 1977; Timberlake 1977; Hopper and Traugott 2003; Lehmann 2004; Traugott and Trousdale 2010).

The occurrence of the prepositional passive is often adduced as evidence (i.e. as a formal manifestation) that rebracketing has taken place (see Inada 1981: 121, 128; Quirk et al. 1985: 1164; Seoane 1999: 125; Denison 1981: 219; Goh 2000: 127; Brinton and Traugott 2005: 126). That is, the occurrence of the prepositional passive presupposes and signifies reanalysis of the V-P collocation, whereby constituent boundaries shift from (6a) to (6b) and the V-P unit behaves as if it were an ordinary transitive verb, eligible for passivization.

(6) a. $[[\textit{insist}]_{V}\ [\textit{on}\ [\textit{something}]_{NP}]_{PP}]_{VP}$
b. $[[\textit{insist on}]_{V}\ [\textit{something}]_{NP}]_{VP}$

The reanalysis claim is typically substantiated by a number of observations attesting to the V-P's status as a semantic unit. Note, however, that none of these observations provide hard-and-fast rules, but rather reflect tendencies.

A first set of observations has to do with the fact that passivizable V-P combinations can often be substituted by single verb equivalents, e.g. *look into*, *account for* and *take advantage of* mean *investigate*, *explain* and *exploit*, respectively. They represent "natural predicates" (van Riemsdijk and Williams 1986: 118), that is, words that are semantically "possible" (van Riemsdijk 1978: 221). This is also evident from their appearance in translations where they represent a single Latin verb (see Dreschler 2015: 119). By contrast, V-P combinations like *send sons to* (7a) and *lose in* (7b) lack such singe word correlates and cannot readily be conceived of as possible lexemes. In such cases, the V-P combination does not "express a lexicalized dyadic relation" (Bresnan 1982: 50).

(7) a. **Public schools are sent sons to by the rich families.*
b. **The third round was lost in by Rocky.*
(van Riemsdijk 1978: 220)

While the substitution criterion may account for the lion's share of V-P sequences with passive morphology, it is not fully exhaustive, especially if one considers prepositional passives where the preposition establishes a locative relation (e.g. *sit on*).

Another formal correlate of semantic unity according to van Riemsdijk (1978: 221) is subcategorization (for a similar view, see Hornstein and Weinberg 1981). Subcategorization entails that the verb determines its complement (the preposition), e.g. "*for* is much more closely tied to *provide* by subcategorization features than, for example, *with* to *travel*" (van Riemsdijk 1978: 221). It is unclear what the nature of these subcategorization features is, so it appears that van Riemsdijk is appealing to intuition rather than any convincing formal characterization. Note that such perceived contrasts may also have arisen historically. In a corpus study on prepositional verbs in Early Modern English, for instance, Claridge (2000: 116–119) observes that foreign words tend to combine with fixed prepositions, while native verbs appear to be more flexible and can be used to exploit the semantic potential of the preposition (e.g. *see* vs. *see to*, *believe* vs. *believe in*).

A related argument in support of the single verb analysis concerns the non-compositionality of meaning reanalyzed V-P strings are said to have (Takami 1992: 95). V-P sequences in acceptable prepositional passives typically have meanings that are not fully predictable from their constituent parts. We may observe the following minimal contrast, taken from Baltin (1978: 103).

(8) a. *This solution was arrived at yesterday.*
b. **This house was arrived at yesterday.*
(Baltin 1978: 103)

In its compositional use, meaning 'to reach a place', *arrive at* is not felicitous as a prepositional passive (8b), but when the phrase is used in its extended, idiomatic meaning of reaching a solution, a prepositional passive is perfectly acceptable (8a). Observe also that in the latter extended meaning the preposition *at* is fixed, while the basic meaning of *arrive* may be combined with other prepositions (e.g. *arrive in London*, *arrive on the scene*). Sometimes this contrast in acceptability is described in terms of abstract vs. concrete subjects (e.g. Svartvik 1966: 165; Quirk et al. 1985: 163).

Again, this criterion is a tendency rather than a reliable test. It is not hard to find counterexamples where compositional strings (which may be unit-like or not) occur in prepositional passives. Thus, unlexicalized combinations such as *sleep in*, *sit on* and *drive under* can sometimes be found in prepositional passives. Concurrently, we find V-P combinations in prepositional passives that arguably constitute semantic units, but are not idiomatized because their meanings can be

easily gleaned from their constituent parts, e.g. *talk about* and *hope for*, whose unit-status is evident from their adjectival use in phrases such as *a less talked-about side effect* and *a long hoped-for cure*.

Other arguments used to strengthen the case of reanalysis draw on syntactic properties of V-P combinations in particular contexts, for instance the difficulty to insert other material into the V-P sequence (9) and the sharing of an object NP with a transitive verb (10).[4]

(9) a. **Your books were gone most thoroughly over.*
(Bresnan 1982: 54)
b. **This matter must be looked very carefully into.*
(van Riemsdijk 1978: 222)

(10) *saul ðet is ðe ueond hateð* & *hunteð efter hire*
Saul that is the devil hates and hunts for her
'Saul who is the devil hates and pursues her'
(a1250 Ancr. (Nero) 57.4; Denison 1993: 129)

4.2.3.2 Connections to other grammatical changes

In addition to the notion of reanalysis, most scholars refer to several developments in the structural system of the English language that fostered the spread of the prepositional passive. These include the extension of preposition stranding, effects of word order change, case syncretism and the loss of the prefixal system.

Most intimately connected to the rise of the prepositional passive is preposition stranding. While the phenomenon of preposition stranding is quite marked from a cross-linguistic perspective (van Riemsdijk 1978), it has been found in English

4 Verb conjunction as in (10) has traditionally been taken as evidence for reanalysis, i.e. the unification of verb and preposition (e.g. Denison 1985: 191; Dreschler 2015: 98, 105–106). Dreschler (2015: 120) notes that in active clauses verb conjunction is one of the few formal signs of reanalysis. While the occurrence of the prepositional passive in itself is assumed to be proof of reanalysis, several authors have noticed that the prepositional passive is often used in verb conjunction as well; in this case it is not the object that is shared between a transitive and a prepositional verb, but the passive subject (e.g. Bolinger (1975), Seoane (1999) and Schwarz (2018, 2019) for English and Engdahl and Laanemets (2015) for Danish, Norwegian and Swedish). This preference was empirically attested for Modern English by Schwarz (2019: 261), who shows, on the basis of the COHA corpus (1870s–1990s), that the prepositional passive is found significantly more often in coordinate structures than the regular passive (4% vs. 1% respectively). The numbers are more pronounced in earlier stages of English (see Chapter 6, Section 6.4.1.1). It is possible that by coordinating a prepositional verb with a transitive verb, the similarity between them is highlighted, which made the use of the prepositional passive more felicitous.

since the earliest documented stage. Nevertheless, scholars agree that preposition stranding in Old English was subject to more rigorous rules than it is today (see Allen 1980: 224–236; van Kemenade 1987: 144–172; Fischer 1992b: 387–391; Traugott 1992: 228–232; Denison 1993: 130–133; Goh 2004; Castillo 2005; Matsumoto 2013; Ringe and Taylor 2014: 442–446). The following generalizations can be drawn from the literature consulted here. In Old English, preposition stranding is found when the complement is a pronoun (11) or an R-element such as *þær* 'there' (12). It is common in relative clauses with the invariable *þe*-relative (13) (the historical precursor of *that*), which is not attested with pied-piping. Importantly, stranding is unattested when an overt relative pronoun is present. Other cases of stranding include infinitival (14) and comparative *as*- or *than*-clauses.

(11) *ða wendon hi me heora bæc to*
then turned they me their backs to
'Then they turned their backs to me'
(Boeth.II.8,12; van Kemenade 1987: 145)

(12) [...] *ðæt þu þær nane myrhðe on næfdest*
that you there no joy in not.had
'That you have no joy in that'
(Boeth.VII.15,11; van Kemenade 1987: 146)

(13) *se micla here. þe we gefyrn ymbe spræcon*
the great army that we before about spoke
'The great army that we spoke about before'
(ChronA 84.1 (893); Denison 1993: 130)

(14) *Þeah he nu nanwuht elles næbbe ymbe to sorgienne*
though he now nothing else not.have about to sorrow
'Though he may now have nothing else to grieve about'
(Bo 24.15; Denison 1993: 131)

Preposition stranding significantly expanded during the Middle English period, not only in terms of frequency, but also in terms of contexts which allow it. New stranding contexts include non-subject contact clauses (15), *wh*-relatives (16), *wh*-questions and topicalization (17) (van Kemenade 1987; Denison 1993). Note that many of the available texts for this period presumably depict a relative conservative picture of the extent of preposition stranding, as they were heavily influenced by French, a language that does not have stranding (van Kemenade 1987: 210).

(15) *nis nan feirure wifmon: þa whit sunne scineð on*
not.is no fairer woman the white sun shines on
'There is no fairer woman the bright sun shines on'
(a1225 (?a1200) Lay.Brut 15517; Denison 1993: 132)

(16) *Nuste nan kempe whæm he sculde slæn on*
not.knew no soldier whom he should strike on
'No soldier knew whom he should strike at'
(L Brut, 27487; van Kemenade 1987: 209)

(17) *Ah ðe gode ich ga aa bisiliche abuten*
but the good I go ever busily about
'But I always diligently pursue the good'
(St Marg. 30,35; van Kemenade 1987: 209)

Importantly, the prepositional passive also made its entry in this period, which makes a scenario in which the occurrence of the prepositional passive is motivated by analogical extension all the more likely.

The rise of the prepositional passive has also been related to word order changes, in particular the change from OV to VO. The change from OV to VO is realized in, among other things, the altered syntagmatic relationship between verbs and particles. Hiltunen's (1983: 111) corpus study neatly documents how P-V order is gradually ousted by V-P order, a development which is more or less completed by 1200 (see also van Kemenade 1987). The stranding position is now postverbal and this change has often been regarded as a prerequisite for the development of the prepositional passive (e.g. van der Gaaf 1930: 8; Mustanoja 1960: 113). However, as Denison (1985: 197) accurately observes, the order in itself is not essential: some of the early prepositional passives have P-V order. Fischer and van der Leek (1981: 327–329) and van Kemenade (1987: 212) argue that the development from OV to VO brings about the adjacency of verb and preposition (P-NP-V → V-P-NP), which conditions the possibility of reanalysis. They therefore view the change from OV to VO as the primary factor in the development of the prepositional passive. Several authors refer to Dutch and German for independent evidence. In these languages, prepositional passives are not attested, supposedly due to the lack of V-P contiguity as a characteristic of OV (van Riemsdijk 1978: 224–226; Fischer and van der Leek 1981: 327–329).

Denison (1985) contests that the formation of the prepositional passive is contingent on the change from OV to VO and the new postverbal stranding position. Nevertheless, he identifies word order changes as being favorable to the spread (in contrast to the constructionalization) of the prepositional passive. His observations concern the rigidification of SVO, which advanced the growth of prepositional verbs (and other multi-word expressions) and led to the rise of auxiliary verbs. The latter likewise increased the number of contexts in which verb and preposition are contiguous. The fixation of SVO has furthermore been linked to the expansion of the passive construction, whose topicalizing function accommodated the increased need for subject-topics (Seoane 2000, 2006, 2009; Los 2009; Dreschler 2015; Petré

2018). This resulted in an overall increase of the passive in Early Modern English (Seoane 2000, 2006) as well as a greater tolerance for passives with unusual subjects, such as the prepositional passive, the NCI and the recipient passive (see Chapter 3 for an in-depth discussion).

Another change that contributed to alterations in the passive is case syncretism (see Bennett 1980; Denison 1981, 1985; Seoane 1999). With the decay of the Old English case system, the syntactic relationships that case endings signified come to be expressed by other means, most notably by word order and prepositions, thus leading to the expansion of prepositional usage in general (Mustanoja 1960: 348; Zehentner 2019: 340).

The use of prepositions was further encouraged as the Old English prefixal system became obsolete. Old English speakers had a large set of inseparable verbal prefixes at their disposal, which performed a variety of functions (de la Cruz 1973, 1975; Hiltunen 1983; Ogura 1995; Petré 2005; Elenbaas 2007). The two functions illustrated in (18) are particularly relevant to our case.

(18) a. *laughen* 'laugh' / *belaughen* 'laugh at'
b. *lǣtan* 'let, allow' / *forlǣtan* 'leave, abandon'

Their ability to transitivize intransitive verb stems (18a) and to modify the meaning of a verb (18b) (in particular in terms of *Aktionsart*) make prefixes an import word formation process. When this system, for a variety of reasons,[5] ceases to be productive, the simplex/compound verb dichotomies in terms of transitivity, aspect and semantic nuances need to be expressed by other linguistic resources. Phrasal and prepositional verbs are among the most suitable candidates to fill this vacuum; borrowing presents another common strategy. Thus, by virtue of *at*, the verb *laugh* can be used as if it were a transitive verb, specifying the object of laughter. The meaning of *forlǣtan* comes to be expressed by *abaundon* (ME), a borrowing from French (cf. OED "abandon, *v.*"). These developments provide a solid foundation for growth of the verb-preposition idiom.

4.2.4 Discussion

The previous sections have introduced the notion of reanalysis and several arguments in favor of such an account for the occurrence of the prepositional passive. We also saw how the rise of the prepositional passive is connected to other changes in the linguistic environment. It is clear that the picture is a complicated one. This

5 See Brinton (1988: 189–191) for an overview.

section highlights a number of issues with the notion of reanalysis as a mechanism of change and re-analyzes the evidence from a usage-based perspective, arguing that the existing variation and gradualness with which the prepositional passive spread to new V-P types in Early Modern English is most naturally explained by appealing to usage-based mechanisms such as processes of entrenchment.

While reanalysis appears to be an intuitive notion, pertinent concerns have been expressed by Fischer (2008) and De Smet (2009), who view reanalysis as an epiphenomenon of more basic cognitive mechanisms, such as analogy and automation.[6] In particular, De Smet (2009) argues that the notion of reanalysis entails both a logical flaw and an ontological issue. The former concerns the widely held view that reanalysis involves the creation of a novel category as a result of structural ambiguity, whereas this "ambiguity [...] strictly speaking exists only in retrospect—that is, after the change has taken place" (De Smet 2009: 1729).[7] If ambiguity is not what motivates reanalysis, but rather the outcome of it, the question arises how speakers arrive at a novel structural representation that does not exist in their grammars. This is the ontological issue that is raised. Presenting some case studies from the history of English, De Smet shows that the reanalysis that is supposed to have taken place can actually be explained by appealing to more fundamental mechanisms such as analogy and automation. Unlike reanalysis, these mechanisms also represent fundamental principles of synchronic grammatical organization, which lends them additional credibility (De Smet 2009: 1731). That is to say, if—as argued in Chapter 2—a theory of language change is first and foremost a theory of language use, then the ways in which linguistic structure changes must be intrinsically linked to how it is used in the community and represented in the minds of individual speakers.

Following this line of thought, I would like to argue here that the expansion of the prepositional passive can be more elegantly explained in a usage-based framework, in particular by appealing to processes of entrenchment. This does not detract from the merits of previous work, but represents an attempt to provide a unified account of the existing variation and gradualness of the spread. In line

6 While this section focuses on reanalysis as a mechanism of change more generally, it should be noted that there are additional issues when the notion is applied to explain the existence of the prepositional passive. One pertinent issue is that the scope of reanalysis in proposals on the formation of the prepositional passive varies widely. Some scholars conceive of reanalysis as a local lexical rule that affects individual V-P collocations and others as a generic syntactic mechanism. The picture is further complicated by a second issue of scope, that is, whether reanalysis targets actives, passives or both. Both issues of scope are elaborated on in Anthonissen (2020b: 110–115).
7 Note, however, that the traditional notion of structural ambiguity has often been nuanced in more recent work (cf. the notion of 'surface underdeterminedness').

with Schmid (2017, 2020), entrenchment is here understood as a cover term for various cognitive processes that operate on linguistic associations in the minds of individual speakers. These processes (including routinization and schematization) are mainly determined by frequency of usage (e.g. token and type repetition) and are subject to social processes (what is conventionalized in a speech community).

If we relate this to our case study, V-P collocations can be conceived of as syntagmatically associated units, that is, "processing units or chunks—sequences of words [...] that have been used often enough to be accessed together" (Bybee 2013: 51; see also Schmid's (2020: 235–237) principle of syntagmatic strengthening). If this may seem like rephrasing reanalysis, recall that reanalysis proceeds abruptly and is leap-like in nature, whereas entrenchment involves the shifting of weights in a speaker's associative network. This has important implications. It means that the status of V-P sequences is not fixed: V-P combinations may be more or less unit-like, they may or may not be compositional, and their degree of entrenchment may vary across individuals, across time and across linguistic settings (e.g. actives vs. passives). As regards compositionality, De Smet (2009: 1750) points out that "automation [or routinization, L.A.] [...] is not to be conflated with loss of internal structure (which may be its extreme consequence): what primarily happens under automation is the emergence of redundant representation". Indeed, while we may distill some coarser categories in terms of fixedness and idiomaticity, ranging from prepositional verbs to adjunct-like sequences (see Vestergaard 1977; Hoffmann 2011: 65–75; Yáñez-Bouza 2015: 38–55), these categories are fuzzy, so that a single V-P sequence may represent a prepositional verb in one utterance (e.g. *arrive at a solution*), and a combination of verb plus adjunct in another (*arrive at* in its literal meaning 'to reach a place'). This cline of fixedness correlates to some extent with the acceptability of V-P combinations in the prepositional passive, insofar as fixed collocations such as *deal with* and *insist on* are more frequently attested in the prepositional passive than combinations like *sleep in* or *go to*.

However, routinization (as a result of token repetition) is only part of the picture; whether a specific V-P sequence can be passivized, let alone used productively in the prepositional passive, is also contingent on its semantic fit with the construction. Compare *consist of* and *sleep in*. The former is a highly conventionalized/entrenched string, yet is not found in the prepositional passive because the event structure of the verb is incompatible with the semantics of the passive construction (see Goldberg's (1995) Semantic Coherence Principle). Conversely, a combination like *sleep in* that is not fixed (cf. *sleep near/under/on/...*) and usually indicates an intransitive activity, may be licensed in the passive if the passive subject is conceived of as being particularly affected by the action or otherwise salient enough to compete for a topicalized position in the clause. Thus, a hotel guest who finds a messy bed when entering her room may say something like *This bed has*

been slept in! In Dutch, which has to some extent retained the prefixal system, this state of affairs may be described by using the transitive verb *beslapen* 'to sleep in/on', consisting of the prefix *be-* and the verb stem *slaap* 'sleep'. In other words, the likelihood with which V-P combinations occur in the passive is also dependent on their resemblance to transitive verbs, i.e. their semantic coherence with the argument structure evoked by passive constructions. To assess semantic fit, speakers must rely on analogical reasoning. The following example from Dickens, also cited in Tuyn (1970: 64), Visser (1973: 2130) and Denison (1985: 193), illustrates that speakers can play with these semantic analogies to achieve a humorous effect.

(19) *In protracted expectation of the weather clearing up, the last evening paper from London was read and re-read with an intensity of interest only known in cases of extreme destitution; every inch of the carpet* ***was walked over*** *with similar perseverance, the windows* ***were looked out of*** *often enough to justify the imposition of an additional duty upon them, all kinds of topics of conversation were started, and failed;*
(Dickens. 1837. *The Pickwick Papers*, chapter 51)

By passivizing verb-preposition combinations that for all the reasons outlined above and in Section 4.2.3.1 would resist passivization, Dickens creates a semantic mismatch, which, as Denison (1985: 194) puts it, "ironically suggests semantic transitivity where none exists". Such an effect can only be achieved if the passivization of prepositional verbs draws on analogies with transitive verbs and the intentional lack thereof creates an incongruity on the part of the reader.

The cognitive basis of synchronic usage is paralleled in diachrony, and complements the explanations offered in the literature. Effects of word order increased the number of contexts in which verb and preposition are adjacent; prepositional use itself also becomes more frequent after the loss of the prefixal system. When identical sequences of V-P strings are repeated, cognitive processes of routinization impact on their syntagmatic and symbolic association (see Schmid 2017). Eventually, they may be processed as chunks or they may develop non-compositional meanings, which makes their appearance in the passive more likely.

There is also compelling evidence that analogy played an important role in the initial spread of the innovation. Denison's (1981, 1985, 1993) scenario of lexical diffusion recognizes the significance of structural and semantic similarities in facilitating the emergence of the prepositional passive. He observes that about one third of early prepositional passives belong to a cluster of closely-related verbs. The most commonly used verb and the presumable starting point of the diffusion, *leten of* 'regard, think of', displayed a number of properties associated with transitive verbs. Because of these multiple local analogies, instantiations of the prepositional

passive with *leten of* obscured the novelty of the pattern. Other verb-preposition combinations that were particularly frequent in the early prepositional passive are verbs that exhibit semantic and phonological similarities to *leten of* (e.g. *leten by*, *setten by/of*, *tellen by/of*). Further evidence of analogy comes from the extension of stranding patterns in Middle English (see Section 4.2.3.2), which are particularly prominent in relative clauses. Dreschler (2015: 121, 354) shows that relative clauses also constitute a preferred context for prepositional passives during its spread, meaning the innovative form tends to occur in contexts where similar patterns have already been conventionalized (and entrenched).

Because routinization and analogy operate within the minds of individual speakers, it is plausible that there has been a transition period in which prepositional passives were acceptable for some speakers, but not for others. Also, speakers who had already adopted the innovation need not have entrenched the same verb-preposition combinations as their peers. This usage-based perspective reconciles two important observations about the early material: first, that a significant number of the attestations belong to a cluster of related verbs, leading to Denison's lexical diffusion proposal; second, that the early attestations feature a remarkably wide range of verbs, which is why Dreschler rejects Denison's scenario and posits a syntactic rule. Conventionalization explains the first observation, entrenchment (and the individual variability that ensues from it) the second.[8]

In brief, this section has argued for a dynamic view of V-P collocations. On this view, V-P sequences become entrenched as patterns of associations in the minds of individual language users as a function of repeated usage in social interactions, which in turn triggers their conventionalization in the speech community. Such patterns of associations may vary between speakers as well as within speakers across time. Passivization of V-P sequences furthermore requires that they denote thematic relations that are compatible with those evoked by the passive construction. In underscoring the gradient nature of V-P collocations and the importance of semantic coherence, the present account offers a natural and cognitively plausible explanation for the existing variation and gradualness with which the prepositional passive spread to new V-P types in Early Modern English.

8 Allen (1980: 227), writing on the topic of preposition stranding in Middle English, notes that one particular individual (Richard Rolle de Hampole) was an "enthusiastic preposition strander" at a time when these patterns were still quite rare in the community (i.e. in the corpus as a whole).

4.3 History of the nominative and infinitive

4.3.1 Preliminaries

Before embarking on the specifics of the historical development, I will first introduce the various types of NCI patterns. NCIs are passive constructions that feature a perception (20a), cognition (20b) or utterance verb (20c), followed by a *to*-infinitive complement. In NCIs, the notional subject of the embedded verb (the *to*-infinitive) and the syntactic subject of the passive matrix verb (the PCU verb) are co-referential.

(20) a. *A stranger was **seen** to enter the building.*
b. *He was **believed** to be involved in the crime.*
c. *The victim is **said** to have suffered severe injuries.*

Following common practice in the extant literature on the NCI, I will take these so-called "PCU verbs" to include not only verbs that code "either a mental state or event [...] or a verbal act" (Givón 2001: 153), but also verbs that are concerned with "showing something", such as *prove* or *show* (Francis et al. 1996: 295). Other terms that have been used to characterize this group of verbs include "*believe*-type verbs" (e.g. Fischer 1989; Noël 2002) and "verbs of propositional attitude" (Los 2005: 254).

Earlier work on the origins of the NCI construction has generally treated NCI patterns on a par with their active counterparts, called ACIs, which is short for *Accusativus cum Infinitivo* (e.g. Warner 1982; Fischer 1989, 1994, to name but a few). Being subsumed under the definition of ACIs, NCIs in such accounts are considered little more than mere syntactic alternations of a structure that inherently conveys the same meaning. The NCI that is of concern here, however, pertains to only one of various constructions that the term ACI may traditionally cover. The term 'ACI' has been used to refer to patterns with a perception (21a) or causative verb (21b) followed by an accusative NP and bare infinitive as well as patterns consisting of a *persuade* verb (21c) or a cognition or utterance verb (21d) preceding an accusative NP and *to*-infinitive complement (Fischer 1989: 174–175; Fischer 1992a: 77–78). It is the fourth type (21d) that represents the active counterpart of the NCI.[9]

9 Perception verbs (as in (21a)) are followed by a *to*-infinitive in the passive (like the *verba cogitandi and declarandi*, cf. (21d)) and are therefore also included in the definition of the NCI. However, they are treated as a separate class in the active because of their different structural behavior (bare-infinitival complement) and history (ACIs with perception verb already appeared in Old English).

(21) a. *They **saw** a stranger enter the building.*
b. *He **made** a scared neighbour open the door.*
c. *They **asked** a passer-by to take the victim to a hospital.*
d. *They **believed** him to be involved in the crime.*

Even if the individual histories of the ACI constructions do not necessarily pertain to a single development, their surface similarities and collective treatment in the literature call for a succinct overview of their descriptive features. Within the wealth of classificatory proposals that the long-standing debate on ACI constructions has generated, two fundamental distinctions recur. The first is concerned with the origins of the various ACIs, more specifically whether they are native English constructions or borrowings from a foreign language. The second opposes so-called 'Exceptional Case Marking' (ECM) (previously 'raising') and 'object control' constructions based on their valency and ensuing structural/thematic analysis. Raising in the context of ACIs involves a two-place verb that takes the NP+INF sequence as a theme argument, whereas the oblique NP represents a single argument of a three-place object control verb expressing its recipient. These dichotomies lay the foundations for the discussion in the first subsection, which reviews the various ACI constructions and provides the historical background against which the proposed scenarios of the origins and spread of the *believe*-type ACI/NCI will be discussed in the subsequent section.

4.3.2 ACI constructions in early English

The interest in the origins of accusative and infinitive patterns dates back to the late nineteenth and early twentieth centuries. One strand of research, represented by Stoffel (1894), Zeitlin (1908) and Visser (1973), contends that ACI patterns were part of the common Primitive Germanic heritage and therefore native to Old English. Zeitlin (1908: 113), in particular, repeatedly emphasizes the nativeness of the ACI, maintaining it "existed to a considerable extent in the very oldest English", and trivializes the influence of Latin. Yet, while the native source of ACIs after perception and causative verbs and verbs of persuading is not contested (see e.g. Bock 1931; Mustanoja 1960; Fischer 1989), the claim is hard to maintain for ACIs complementing PCU verbs (an important distinction which Zeitlin failed to make), and most scholars thus agree that the *believe*-type ACI is a borrowing from Latin, or at least heavily influenced by it. As will be shown below, this development must be understood against the background of various language-internal changes, which facilitated the adoption.

Old English attestations of ACIs with verbs of saying and thinking (as presented in e.g. Zeitlin 1908; Bock 1931; Visser 1973) require careful scrutinization. Many of the examples have been recognized as "slavish imitations from Latin" (Fischer 1989: 160; see also Lightfoot 1991: 81), and Bock (1931: 230–231) himself seems to acknowledge that given the strong influence of Latin it is highly unlikely that such ACIs were part of the English idiom. Yet, Miller (2002: 161), siding with Zeitlin (1908), maintains that "imitation of Latin was neither a sufficient nor a necessary condition". There are indeed a number of verbs that seemingly unequivocally belong to the category of PCU verbs and have been shown to occur outside of Latin translations in Old English (most notably *gefrignan* 'find/meet', *witan* 'know', *findan* 'find' and *ongietan* 'see/understand'), which thus seems to corroborate the initial claim that *believe*-type ACIs were original to Old English. Fischer's (1989) careful syntactic and semantic analysis of these verbs, however, demonstrates that they should be considered as belonging to the category of perception verbs (cf. (21a)) rather than *believe*-type verbs (cf. (21d)).

Contrary to what our intuitions of Present-Day English may lead us to believe, these verbs side with *perception*-type verbs semantically, Fischer argues. Old English *witan*, for example, is not only etymologically related to this verb class (sharing the same root as Latin *video* 'to see'), it also preserved its meaning of *to be aware/conscious of* and *to see/behold*, whereas the sense of direct perceptual evidence is absent in a verb like *cunnan*, which originally meant *to have learned/to have attained knowledge* (Fischer 1989: 199; but see Miller 2002: 160–161 for some critical remarks). This etymological semantic difference is borne out in how the verbs behave syntactically: unlike *cunnan*, *witan* displays a distribution similar to perceptions verbs in that it occurs in the same patterns as perception verbs (e.g. with bare infinitives rather than *to*-infinitives) and is not attested in contexts in which perception verbs do not occur (e.g. with complementation patterns featuring only an infinitive or past participle) (Fischer 1989). These findings do not, of course, exclude the possibility that verbs like *find* and *know* switched classes in later periods, as their present-day uses attest to.

The second dichotomy that has received a great deal of attention, especially in the generative tradition, is the distinction between two-place 'raising' verbs (more specifically, 'raising-to-object', see e.g. Postal 1974; Lasnik and Saito 1991) and three-place 'object control' verbs. Raising-to-object refers to the idea that an NP that is the subject in the lower clause is raised to the object position of the matrix/higher clause (cf. *They saw that she entered the building → They saw her enter the building*). More recent generative studies on the topic (e.g. Miller 2002; Los 2005; Dreschler 2015) use the term 'Exceptional Case Marking' (ECM), which originated in the Government and Binding framework (Chomsky 1981). On this view, "[t]he lower-clause subject is no longer said to move, or be raised, to the object position of

the higher clause but now receives case in its original position in the subordinate clause" (Dreschler 2015: 157). With object control, the NP following the matrix verb is conceived of as an argument of the matrix verb that 'controls' the empty subject pronoun of the non-finite verb in the lower clause. While the intricacies of the theoretical framework and movement operations need not concern us here, the crucial idea is that this distinction is meant to capture a structural difference in how the verbal complements are processed, namely whether the NP following the matrix verb constitutes an argument only in combination with the infinitive (as in (22a)), or, alternatively, is taken to be a single argument of the matrix verb (as in (22b)).

(22) a. *[They] saw [her enter the building].*
b. *[They] asked [her]$_i$ [PRO$_i$ to take the victim to a hospital].*

Thus, the NP+INF sequence with two-place verbs is considered to be a unit, whereas it represents two different arguments of three-place verbs. The notions of unity and dependency on the matrix verb are recurrent ideas with the traditional grammarians as well, and have been used extensively to describe and/or classify the distinctive patterns. Bock (1931: 220), for instance, uses the syntactic force of the connection ("syntaktische Geltung der Verbindung") between the accusative and the infinitive as well as their relation to the matrix verb as the basis for his division. With regard to perception verbs, Zeitlin (1908: 109) notes:

> It is, in brief, impossible mentally to dissociate the two elements, accusative and infinitive: they express a single conception. When I say "he sees *a man walking,*" I do not mean that he sees *a man* or that he sees *walking*, but only that he sees *a walking man*.

While individual classifications vary and may have conflated some of the distinctive patterns proposed in (21), *persuade*-type verbs have usually been treated as a separate category due to their object control reading and three-place valency frame (e.g. in the grammars by Poutsma (1926: 431) and Jespersen (1940: 279)). Broadly speaking, then, the three other groups, represented by (21a), (21b) and (21d) and collectively referred to as EXPECT[10] verbs by Fischer (1989), are considered two-place raising/ECM constructions.

This broad dichotomy is also apparent from selection restrictions on the noun phrase following the matrix verb. Drawing on Old English text material and evaluating previous accounts, Fischer (1989) concludes that *persuade*-type verbs are exclusively found with animate oblique noun phrases, whereas EXPECT verbs may also be accompanied by inanimate noun phrases, cf. the contrast illustrated in

10 Small capitals will be retained to reflect its status as an overarching concept.

(23). Other remarkable contrasts Fischer discusses include the ability to appear in double object constructions and with *that*-clauses that are preceded by a noun phrase (24). NP+NP and NP+*that* sequences are possible with *persuade*, but not EXPECT verbs.

(23) a. *I expected a house to be built by John.*
b. **I persuaded a house to be built by John.*
(Fischer 1989: 176)

(24) a. **I expected John that he would give the lecture.*
b. *I persuaded John that he should give the lecture.*
(Fischer 1989: 176)

Whereas *persuade*-type verbs have thus been singled out in the literature as a special type, their early development is obscured by the fact that in addition to the object control reading some PDE utterances can be analyzed as raising/ECM constructions as well (Postal 1974; Los 2005), which is illustrated in (25). This is not a trivial fact seeing that *persuade*-type ACIs with this second interpretation bear a striking similarity to *believe*-type ACIs (both have an ECM interpretation and feature a *to*-infinitive rather than a bare infinitive).

(25) *I allowed Bob to leave.*
a. *I allowed Bob$_i$ [PRO$_i$ to leave].*
'I gave Bob permission to leave.'
b. *I allowed [Bob to leave].*
'I gave permission for Bob to leave.'
(adapted from Los 2005: 239; see also Postal 1974: 318)

Crucially, this ambiguity did not exist in Old English as *to*-infinitival *persuade*-type verbs always triggered an object control reading, that is, the object NP and infinitive are considered to be separate arguments of the matrix verb (Los 2005) (the situation is slightly different for bare infinitives, see infra). Fischer (1989, 1991, 1992a) suggests that language-internal reasons, more specifically the word order change from OV to VO in the course of Middle English, promoted the reanalysis of object control as ECM constructions. She argues that speakers of an OV language like Old English would analyze an NP immediately preceding a finite or non-finite verb as the object of that verb because it fills the unmarked object position. Hence, *þone diacon* in (26) would naturally be interpreted as the object of *unscrydan*.

(26) *one het* *on his gesihðe þone diacon unscrydan*
and commanded in his sight the deacon undress

'and commanded (someone) to undress the deacon in his presence'
(ÆCHom I,29 424.11; Fischer 1989: 206)

When VO came to be established as the unmarked order, a preverbal NP like *þone diacon* can no longer be analyzed as the object of the following verb, and is instead taken to be its subject. As such, the loss of OV orders in Middle English might have contributed to the innovative two-place reading of *persuade*-type verbs, paving the way for the acceptance of the Latin ACI with *believe*-type verbs (Fischer 1989: 205).

Los (2005: 239–252) refines this scenario by demonstrating that the *persuade*-type group of verbs in fact conflates two different groups of verbs, verbs of persuading and urging on the one hand, and verbs of commanding and permitting on the other. The main findings of this study will be summarized in the following paragraphs.

Verbs of persuading and urging (27) have been accompanied by a *to*-infinitive since Old English and prompt an object control interpretation. Thematically, the *to*-infinitive functions as the goal, which it is said to have inherited from the purposive *to*-PPs that appeared in this position.

(27) Verbs of persuading and urging in Old English
V $[NP_{acc}]_{THEME}$ [PRO *to*-INF]$_{GOAL}$
(adapted from Los 2005: 241)

This group is distinguished from verbs of commanding and permitting (28), which could trigger both a three- and two-place analysis depending on the type of infinitival complementation (three-place interpretation with *to*-infinitives vs. two-place interpretation with bare infinitives). The variation that these *command*-type verbs allow for is furthermore shown to correlate with animacy, thematic frames and case marking. Bare-infinitival raising/ECM/two-place constructions feature an accusative inanimate noun phrase which in combination with the infinitive functions as the theme argument of the matrix verb, and receives its individual thematic role from the infinitive (28a). In a *to*-infinitival object control or three-place analysis, an animate noun phrase is directly governed by the matrix verb of which it is a recipient and is co-referential with (or 'controls') the empty pronoun that is the subject of the 'lower' infinitival clause (28b).[11]

(28) Bare vs. *to*-infinitival use of verbs of commanding in Old English
a. V $[NP_{acc}$ INF$]_{THEME}$

11 Dative and infinitive constructions have usually been subsumed under the heading of ACIs, probably because some verbs (e.g. of the class of *command* verbs) could govern both or because the difference could no longer be formally distinguished after Old English (Fischer 1989: 145–146).

b. V $[NP_{dat}]_{RECIPIENT}$ [PRO *to*-INF]$_{THEME}$
(adapted from Los 2005: 241)

From Early Middle English onwards, however, this strict division of labor between the bare and *to*-infinitive seems to be loosened as the *to*-infinitive encroaches on the semantic territory previously marked by bare infinitives, giving rise to *to*-infinitival ECM-constructions. In other words, verbs of commanding and permitting innovatively start to appear in a configuration with a *to*-infinitive *and* a two-place interpretation. This innovation affected especially those verbs that were not previously attested with infinitival complements or did not yet exist in Old English, e.g. the French loan *commaunden* 'command' (Los 1999: 297).

(29) *þou comaunded þy comaundement to ben greteliche kept*
you commanded thy commandment to be strictly kept
'you commanded your commandment to be carried out to the letter'
(EARLPS, 145.2145; Los 2005: 242)

Importantly, Los's analysis of *command* and *permit* verbs is based on data from the M1 and M2 periods of the PPCME, which situates these developments in the time frame of 1150–1350, that is, *before* the first appearance of *believe*-type ACIs in the late fourteenth century (see Los 2005; Warner 1982). This means that *to*-infinitival ECM constructions were already attested with verbs of commanding and permitting before the *believe*-type ACI entered the language.

4.3.3 Origins and spread of the *believe*-type ACI/NCI

Unlike the ACI patterns with perception, causative and persuade verbs, which are native Old English structures, the *believe*-type ACI and NCI are often considered calques from Latin (hence the designations "learned" or "Latin-type", e.g. in Fischer 1992a, 1994), first appearing in the late fourteenth century (see the discussion in Section 4.3.2). I will use the term ACI in this section to refer to *believe*-type ACIs only, that is, those patterns which from a purely formal point of view represent the active version of NCIs. The other ACIs discussed in the previous section will be specified if needed. The following examples illustrate a Latin ACI and NCI with their respective renderings in the Middle English version of the Bible.

(30) *Quem principem esse palatii* [...] *cognoverant:*
whom to be prince of the paleis [...] *thei knewen;*
'whom they knew to be the prince of the palace'
(Esth 9.4 EV; Warner 1982: 142)

(31) *tu, qui non crederis esse in virtute consummates,*
thou, that art not beleeued to ben in virtue ful endid;
'you, who are not believed to be fully perfect in virtue'
(Sap 12.17 EV; Warner 1982: 142)

Warner (1982), drawing on corpus material from the Wyclifite sermon cycle (c1390) and some other contemporary data (most notably the Wyclifite Bible and a collection of examples from Chaucer's work), offers one of the first empirical accounts of the ACI/NCI in Middle English, with particular emphasis on verbs of knowing, thinking and declaring. His study demonstrates that these patterns are "particularly appropriate to the idiom of Latin translation in the late fourteenth century" (Warner 1982: 140), thereby confirming previous claims made by Bock (1931: 232–233), who noted that ACI/NCIs are disproportionately more common in the Wyclifite Bible translation than in the Wyclifite sermons and that they are also very infrequently used in fourteenth-century philosophical tracts. These observations indicate that fourteenth-century attestations of the ACI and NCI construction are heavily inspired by Latin prose, and might not have been very salient in spoken language (even though the authors may be considered to be Latin-English bilinguals, as Warner (1982: 18) points out). While the influence of Latin as the reason for the introduction of this new syntactic expression is uncontroversial, the role it played in the construction's spread and survival in the English language (i.e. in the post-constructionalization period) has been a matter of debate.

In what follows, I will discuss the main scenarios for the spread of the Latin-type ACI/NCI as offered by Warner (1982), Fischer (1989, 1992a, 1994), Los (2005, 2009), Dreschler (2015) and Noël (2001, 2008). The various approaches appear in a more or less chronological fashion, which reflects the shift from a more externally motivated explanation for the spread of the ACI/NCI that hinges on Latin as an external prestige model (Section 4.3.3.1), to a more internally motivated one, involving language-internal structural factors (Section 4.3.3.1), discourse-pragmatic factors (Section 4.3.3.2) and construction-specific semantics (Section 4.3.3.3) at work. It is the discourse-pragmatic factors that most convincingly explain the incipient spread of the NCI and its establishment into the English grammar, yet the extremely skewed distribution in favor of the NCI today was possibly also advanced by an increase in its use as an evidential marker.

4.3.3.1 Contact-induced grammaticalization

Ascribing a central role to Latin as an external prestige model, Warner (1982) sets out to demonstrate how the construction spread in English when it started to appear outside Latin-inspired texts in the fifteenth century. In the early stages of

the change, the construction remained most acceptable in Latin-related texts. A comparison of two versions of the Wyclifite Bible demonstrates that the construction occurs approximately four times more often in the version that adheres more closely to the Latin original than in the more idiomatic version (120 as opposed to 28 examples; Warner 1982: 141).

In addition to the 'Latin-relatedness' of the text, Warner discusses a number of grammatical parameters that govern the acceptability of the newly introduced infinitival complementation pattern [NP *to* VP], which according to him could not be straightforwardly adopted unless there was some kind of modification or analogous existing structure to facilitate accomodation of the Latin target construction. He likens the process to that of a basilect approaching an acrolect, whereby speakers of the former variety (English) accommodate a more prestigious feature of the acrolect (Latin) by means of "minimal alterations", that is, by adopting it in contexts where the change would be the least noticeable (Warner 1982: 148; see also Naro and Lemle 1976). Two of these contextual parameters seem to be particularly corroborated by his data, one involving the high incidence of *be* as the non-finite verb and another involving NP-fronting. Often these two are combined.

Building on suggestions made by Bock (1931: 243), Warner argues that the prevalence of *be*-infinitives in the ACI hinges upon it being a minimal alteration of an already existing complementation pattern of verbs of thinking and knowing, namely [NP PRED], as in (32a) (see also Denison (1993: 184), who regards it as a "possible forerunner" of the ACI). Extension of this predicative pattern to [NP *to be* PRED], illustrated in (32b), is considered only a minor change, which facilitated the acceptance of the ACI.

(32) a. *They consider her a great writer.*
b. *They consider her to be a great writer.*

The interchangeability of [NP PRED] and [NP *to be* PRED] is supported by a recent study on the diachronic variation between secondary predicate constructions ([NP ∅/*to be*/*as* PRED], or '*zero*-SPC', '*to be*-SPC' and '*as*-SPC') after various types of verbs. D'hoedt (2017: 238–246) shows that in Middle English it was primarily causative verbs and verbs of communication and mental representation that exhibited variation between *zero*-SPC and *to be*-SPC. In the course of Early Modern English, the number of verbs of communication and mental representation that are attested with the two predicate types strongly increased, whereas it remained stable for causative verbs. Interestingly, perception verbs (e.g. *discern*, *perceive*, *find*, *observe*), which were attested with the *to be*- but not the *zero*-SPC in D'hoedt's Middle English data, innovatively combine with the *to be*-SPC in Early Modern English. All in all, these observations suggest an attraction effect with increased

interchangeability of *to be*- and *zero*-PRED in Early Modern English for verbs of communication, mental representation and perception (i.e. exactly those verbs that the PCU category comprises), that is, there was already some variation between the two predication types in the early stages, but it spread to more PCU verbs when speakers sought to adopt the ACI.

Warner's second parameter encouraging acceptability involves various NP-fronting mechanisms to avoid overt [NP *to* VP] surface structure, resulting in [NP (...) *to* VP]. This happens in questions and relative clauses (33) and by means of passivization (34) and topicalization (35).

(33) *whom thei knewen to be prince of the paleis*
(Esth 9.4 LV; Warner 1982: 142)

(34) *the zodiak in hevene is ymagyned to ben a superfice*
(Chaucer Astr I.21.36; Warner 1982: 146)

(35) *but þis pope* [...] *we shulden not bileve to be of Christis Chirche;*
(Sermon ii.388.2; Warner 1982: 136)

The data show that ACIs with fronted NPs (which include NCIs) are not only more common, but are "apparently less restricted in occurrence outside Latin translation" (Warner 1982: 136). This may be explained by the lower syntactic salience when noun phrase and complement are separated by the main verb, which would make the use of the new syntactic expression less noticeable. Yet, it is unclear how this fits exactly into the story of minimal alterations, as the changes involve fairly complex operations, and, as Warner (1982: 156) himself acknowledges, particularly the passive version "is without a convincing and satisfactory surface analogy".[12] This leads to the paradoxical situation in which it is the more complex structures that are unmarked. Moreover, given that the preference for moved NPs (with passives, i.e. NCIs, in particular) and to a lesser extent *to be*-complementation persists to date, Warner (1982: 155) admits that "it is difficult to see how such long term stability in variation can have been maintained with parameters which are merely a consequence of the 'least noticeable' changes which happened to be available in lME syntax". He then concludes that these parameters and their interaction must

12 Warner (1982: 156) adds that the prevalence of the NCI "may be more deeply motivated", possibly connected with "the changing status of English objects", but does not go into detail. As Dreschler's (2015: Ch. 3) study demonstrates, there were other types of passives (the prepositional passive, e.g. *he was laughed at*, and the recipient passive, e.g. *he was given a book*) that came into use around this time and which could have served as analogous models for the NCI (see also Chapter 3).

be "somehow natural" (Warner 1982: 155), implying that they are structural rather than mechanisms of change, but leaves this issue to further research.

Assuming that Latin influence could not have been the only factor at play, Fischer (1989, 1994) argues that the structural preferences Warner observed can in fact be interpreted as relating to a single language-internal change, namely the change from OV to VO (see Section 4.3.2). She explains that speakers would only use the construction if the noun phrase preceding the infinitive "can *only* or fairly easily be interpreted as a subject", thereby avoiding misinterpretation of the syntactic status of the nominal element which would previously be understood as the object of the infinitive (Fischer 1989: 211). One strategy to reduce the syntactic ambiguity of the pre-infinitival noun phrase is NP-fronting (i.e. Warner's second parameter). Even though the fronted noun phrase could still be ambiguous, Fischer (1989: 211) argues this posed less of a problem to speakers because they were used to the versatility of the clause-initial position, which could host both objects and subjects. Since this hypothesis is only briefly touched upon, it remains rather speculative.

A more detailed explanation is offered for the prevalence of *be* and other intransitive verbs (including passive infinitives) in the new construction, which are conceived of as another disambiguating strategy (i.e. Warner's first parameter). In a series of studies, Fischer elaborates on the role of the passive infinitive in this process (Fischer 1992a, 1994; Fischer et al. 2000). In brief, the passive infinitive was introduced in infinitival complements in order to avoid awkward object infinitives (active infinitives preceded by the object of that infinitive, e.g. (36)) when word order changed from OV to VO.

(36) *he sette scole, 7 on þære he let cnihtas læran*
he set-up school-DAT.SG and in it he let boys-ACC.PL. teach-INF
'He set up a school in which he had boys taught.'
(Bede 3(O)14.208.8; Fischer et al. 2000: 226)

As the use of passive infinitives became current with causative verbs (such as *let*), other verb classes started to appear with passive infinitives. A key development was the analogical extension of the passive infinitive to (causative) *persuade*-type verbs because it introduced the ACI pattern with this verb class, that is, *persuade*-type verbs followed by a nominal element and a *to*-infinitive could innovatively be interpreted as two-place ACI patterns (e.g. *[order] [him to be released*]), whereas before only a three-place object control interpretation (e.g. *[order] [him] [to go]*) was possible (Fischer 1992a: 64–69; Fischer 1994: 98–103; see also earlier comments by Zeitlin 1908: 108). These new usage patterns of native ACIs, which innovatively combine a *to*-infinitive (rather than a bare infinitive) and a two-place ACI interpre-

tation, facilitated the introduction of the Latin-type ACI.[13] Fischer et al. (2000: 246) conclude: "The influence from Latin was present all along, but only became effective when the syntactic structures of English had been altered in such a way that Latin AcI's resembled the new native AcI's".

Essentially, the position taken by Fischer (1989, 1992a, 1994) can be characterized as one that tries to reconcile language-external and language-internal influences at work. On this view, Latin influence was reinforced by language-internal change, that is, only when the Latin-type ACI started to resemble native ACIs (e.g. ECM interpretation of *persuade*-type verbs, especially if followed by a passive infinitive) as a result of the change from OV to VO could they be fully integrated into the English language. Fischer's account would also explain why the construction in a language like Dutch never really gained ground despite some popularity under Latin influence in the Middle Ages and Renaissance: the language-internal factor was absent in the history of Dutch, which remained OV, and when the influence of Latin waned, so did the use of the ACI/NCI (see also Noël and Colleman (2009, 2018) and Colleman and Noël (2012, 2014) on the fate of the Dutch NCI).

4.3.3.2 Information structure

Most of the mystery surrounding the parameters governing the use of the ACI is directly or indirectly related to the prevalence of the passive over the active form of the construction, that is, NCI vs. ACI proper, both in frequency and productivity. This remarkable situation had already been observed by Warner (1982: 134–157) for Middle English, although the passive did not yet prevail in raw numbers. In Present-Day English, the NCI construction is not only more common than its active counterpart, it is also less restricted with respect to the range of matrix verbs that can occur in the construction and the type of infinitival complement. In the BNC, the most frequently instantiated matrix verbs are passivized[14] and certain verbs commonly attested in the passive (e.g. *say*, *repute*, and *rumor*) are not attested in the active at all (Noël 2001: 257–259; similarly, Mair 1990: 176). Active *believe*-type verbs are also subject to stronger restrictions regarding the infinitival complement. While both the ACI and NCI are generally found with stative or perfective infinitives (typically with *be*), this preference is less strongly borne out in the passive, which can be more easily combined with lexical infinitives that have not undergone

13 Recall from Section 4.3.2 that it is actually a subgroup of the *persuade*-type verbs, i.e. verbs of commanding and permitting, that shows this innovative behavior (Los 2005: 239–252).

14 Of the 30 *believe*-type verbs that are instantiated more than 50 times in the ACI/NCI construction, only 6 occur more often in the active (*take*, *feel*, *declare*, *prove*, *imagine* and *reveal*, see Noël 2001: 257–259).

passivization or perfectivization, as in (37) (Bolinger 1974: 77; Mair 1990: 175, 189–190; Noël 2001: 259–264).

(37) *There is also strong evidence that we should increase the proportion of mono-unsaturated fats, as these have been shown to* ***raise*** *the level of HDL cholesterol* [...] *in the blood.*
(Noël 2001: 260)

Comparing the types of infinitives in a selection of examples, Noël (2001: 259) finds that passive PCUs may be complemented with such lexical infinitives in nearly one in five times, whereas active PCUs either do not once occur with lexical infinitival complements or if they do, do so less commonly than passive matrices.

Part of the discrepancy between the ACI and NCI may well be accounted for as an effect of competition on the former's part seeing that the uninflected *to*-infinitival complement in the active alternates with a finite *that*-clause[15] whose combinatory possibilities are much less confined. Unlike their *to*-infinitival counterparts, finite complement clauses are not subject to restrictions on the type of verb used and more easily permit adverbial modification and additional layers of embedding (see e.g. Mair 1990: 196–200). Corpus studies have furthermore shown that while *that*-clauses occur freely with both given (65%) and new (35%) subject referents, infinitival complements almost exclusively contain given ones (91%) (Noël 1999: 61; in a similar vein, Noël 1998). Sometimes the two complementation types are also opposed in terms of style, *that*-clauses being argued to be the "stylistically neutral" option (Mair 1990: 197). Given the prevalence of the ACI in formal genres, this criterion could indeed be argued to (co)determine the choice between two alternatives, yet it is hard to assess which role it would play in speakers' individual choices (cf. is *to*-infinitival complementation in itself more formal, or does it derive its purported formality from being used more frequently in learned styles?). Despite the subjectivity of the last argument, it is abundantly clear that the *to*-infinitival ACI loses out on the *that*-clause in various respects, which may be one reason to explain the infrequency of the former.

The availability of an extraposed *that*-clause following anticipatory *it* and a passive matrix verb (e.g. *it is said/believed/shown that X*) may suggest that the situation of the NCI is not altogether different. However, while *that*-clauses with active matrices outperform ACIs in many ways, the functional labor between NCIs and extraposition seems to be more evenly distributed as passive subjects are typically given and anaphorically relate to the previous discourse, whereas extraposition

15 Note that the conjunction *that* need not always be present, e.g. *He thinks (that) Mary is a great writer*.

tends to be used with heavy subjects conveying information that is new to the discourse (see Biber et al. 1999: 676–680; Kaltenböck 2005). Information-structural demands do not only explain the differing needs for NCIs and extraposition, they also shed light on the skewed relationship between ACIs and NCIs.

One of the first to elaborate on the information-structural function of the NCI was Mair (1990), who suggested that the discourse-linking function of the passive is one of the primary reasons for the predominance of NCIs over ACIs in Present-Day English. The following example may illustrate how information-structural conditions motivate the speaker or writer's use of the NCI (as compared to ACI and both active and passive structures with *that*-clauses).

(38) *Thanks to the ubiquitous television set, the best known Canadians in Britain are, quite possibly, Bernard Braden, Hughie Green and Robert McKenzie. Others more talented – Jon Vickers, Lynn Seymour, Mordecai Richler, Sir William Butlin, John Hemming, Oscar Petersen, Garfield Weston, Paul Anka, Glenn Ford, Yvonne de Carlo, Raymond Burr, Donald Sutherland and Christopher Plummer – are probably seldom identified as Canadians.* ***Many of them are generally assumed to be Americans****, which raises the whole question of Canada's continuous struggle to maintain a separate identity from her giant neighbour.*
(Mair 1990: 180)

Mair (1990) argues that there are good reasons that the writer opted for the NCI even though other options would have been equally felicitous in strictly grammatical terms (cf. (39)). The subject of the NCI (*many of them*) meronymically relates to the names introduced in the preceding sentence, and as such represents given (more specifically, 'accessible') rather than new information. Placing this constituent in sentence-initial position complies with the natural tendency to present information in such a way that it flows from what is known to the hearer to what is new. Ordering information in such a way is considered to be one of the primary factors contributing to the coherence of a discourse. The other options, presented in (39b)–(39d), fail to establish such a link with the preceding discourse, and, as such, are less suitable in terms of "textual cohesion" (Mair 1990: 181). Along similar lines, Noël (1998: 1057–1058) notes that ACIs often disrupt "thematic progression" because the subject of the infinitive is typically given, and therefore a prime candidate for the clause-initial position, which is already filled by another discourse referent that is not necessarily more given than the infinitival subject. The NCI neutralizes this information-structural conflict.

(39) a. *Many of them are generally assumed to be Americans.*
b. *People generally assume many of them to be Americans.*

c. *People generally assume that many of them are Americans.*
d. *It is generally assumed that many of them are Americans.*
(Mair 1990: 180–181)

While both Warner and Fischer had noticed the relatively high incidence of passive ACIs (i.e. NCIs) in the early stages, it was not until more recently that this remarkable fact was connected to the changing mapping of syntax and information structure in the history of English (Los 2005, 2009; Dreschler 2015). Building on Mair's (1990) suggestions about the discourse-structuring potential of the NCI, Los (2005, 2009) proposes that information structure was also key to the introduction of the NCI in Middle English. More specifically, she argues that the discourse-linking function of passives which crucially hinges on its ability to create unmarked themes caters for the increased need for subject-topics after word order changes established SVO as the default sentence pattern. Before English developed from a V2 to a strict SVO language, speakers had several options at their disposal to satisfy the given-before-new requirement: while the clause-initial position could be filled with new information to draw the hearer's attention to this piece of unexpected information, it primarily served as a position to store given information that provides an unmarked link to the preceding sentence, regardless of the syntactic function of the clause-initial constituent (e.g. subject, direct/indirect object, adverbials). The finite verb thereby served to mark the boundary between given and new information (Hinterhölzl and Petrova 2010: 319). With the decline of V2 and the fixing of SVO word order, the different word order options become restricted: clause-initial objects and adverbials become marked and only the subject remains as an unmarked discourse linker (see also Los and Dreschler 2012). This leads to a situation in which we increasingly find a one-to-one mapping of information status to syntactic function, with objects being associated with new information, and subjects with given information (see also Los and van Kemenade 2012). When given objects could no longer be used as an unmarked discourse linker, passivization presents itself as a convenient means to obtain a similar effect: a given object could be turned into a given, and therefore unmarked, subject to sit in its preferred clause-initial linking position.

Importantly, Los (2005, 2009) views the NCI as a syntactic change emerging after, that is, as a reaction to, the loss of V2: "syntactic change (the loss of verb-second) affects discourse, and pressure from discourse results in syntactic change (i.e. the emergence of new constructions)" (Los 2009: 121). Dreschler (2015) agrees that the need for subject-topics ensuing from the loss of V2 and fixing of SVO explains why the construction gained ground in English, but rejects the scenario in which a *new* construction emerges because it had already been frequently attested well before the loss of V2 was completed. While a strictly causal relationship, as

the one proposed by Los, is therefore unlikely (all the more because of the strong Latin influence in that period), Dreschler's reasoning is flawed as well: while it is true that the loss of V2 is largely completed by 1500 and the first NCIs were attested roughly a century earlier, she fails to take into account that changes like the loss of V2 do not happen overnight. Nothing in principle prevents changes from coevolving, that is, it is possible that as V2 was increasingly avoided, so could the NCI expand. However, the historical data presented by herself and others discussed in this section do indicate that the major changes in the NCI happen in the aftermath of the loss of V2, that is, in Early Modern English. This is also corroborated by Seoane's (2006) findings on the increasing proportion of passives (as opposed to actives) in Early Modern English, which she attributes to the same scenario in which the use of existing constructions expands because of changes elsewhere in the grammar (see Chapter 3).

Information-structural motivations do not only account for the general avoidance of the ACI, they also elucidate the observation that ACIs appear to be more acceptable in relative clauses, a preference which was already described for the earliest occurrences in Middle English (Warner 1982) and which still holds today (Mair 1990). Mair (1990: 191–192) himself invokes stylistic and processing requirements to account for the fact that the relative clause is the only syntactic environment where infinitival complementation outdoes finite complementation, characterizing the latter as "less elegant" and/or "difficult to process" (e.g. because two finite verbs are concatenated as in (40c)), or ungrammatical to begin with (because the subject of a *that*-clause cannot be extracted, e.g. (40b)). In the following examples, (40a) represents a corpus attestation, (40b) and (40c) are constructed paraphrases of the alternate structures. Processing difficulty has also been related to the choice of grammatical variants, for instance in Rohdenburg's (1996: 151) work on the complexity principle, according to which speakers tend to prefer more explicit (i.e. more elaborate) grammatical constructions in cognitively complex environments.

(40) a. *I've seldom heard a string of sentences **that I** really do believe **to contain** quite so many faulty analyses of the present situation.*
b. ***I've seldom heard a string of sentences **that I** really do believe **that contains** quite so many faulty analyses of the present situation.*
c. *I've seldom heard a string of sentences **that I** really do believe **contains** quite so many faulty analyses of the present situation.*
(Mair 1990: 191)

An additional, and perhaps more plausible, explanation involves discourse-pragmatic motivations in terms of information structure. Knowing that information structure affects the choice between active and passive PCU matrices as well as the

type of complementation following these verbs, one is bound to consider its role in other syntactic environments. The relative clause is one type of environment which, much like the passive, rearranges the typical constituent order that we find in main declarative clauses. Because object NPs in ACI constructions are typically given, they compete with the subject for topic status.[16] The inherent potential of those object NPs for becoming aboutness topics is underscored by the idea that a sentence like *I believe X to be …* should be paraphrased as (41b) rather than (41a), as proposed by Maxwell (1984: 370).

(41) a. *I believe that X is …*
b. *I believe about X that X is …*

The most obvious way to achieve topic status of a non-subject NP is by passivization; another way involves relativization, as exemplified by (42).

(42) a. *They are assumed to be Americans.*
b. *… the actors, who I assume to be Americans.*

The subject and object referents in the relative clause in (42b) can be analyzed in terms of an aboutness relation, which, as was established in Section 3.2.1, characterizes topichood. In particular, it can be argued that in relativized ACIs both the subject expression (*I*) and object expression (*who*) are topics, more specifically, the respective primary and secondary topic. While some approaches have explicitly argued against the existence of multiple topics (e.g. Reinhart 1982), others reject the claim of topic uniqueness, arguing that an utterance may add to the hearer's knowledge about several activated discourse referents (Givón 1979, 2001; Lambrecht 1994; Erteschik-Shir 1997; Nikolaeva 2001). A secondary topic may then be viewed as "[a]n entity such that the utterance is construed to be ABOUT the relationship between it and the primary topic" (Nikolaeva 2001: 26; emphasis in original). Indeed, in (42b), the assertion of the relative clause specifies the relation between the referents of the object and subject expressions.

With the given object and subject referents in preverbal position, the situation evokes a parallel with the Old English V2 system, in which V3 patterns regularly occurred with topical non-subject NPs in first position and unaccented pronouns (salient discourse referents, typically primary topics) functioning as preverbal clitics (cf. van Kemenade 1987). Similarly, relativization of the NP transforms ACIs in such a way that they more strongly resemble patterns complying with the natural flow from given to new. These findings constitute the final piece of the puzzle on

16 Also, as indicated above, objects are typically associated with new rather than given information, which makes the presence of given object NPs in the ACI construction awkward.

trying to account for Warner's (1982) parameters: while passivization promotes a non-agentive NP to topic status and strengthens textual coherence, relativization, I have argued, serves much the same purpose: the relative pronoun expressing the object has not only acquired (secondary) topichood, by definition it also anaphorically links the utterance to the immediately preceding discourse (the matrix clause), which in turn contributes to a coherent and natural ordering of available information.

In sum, we may conclude that it is primarily information-structural needs that have stipulated the path of the ACI/NCI and account for its idiosyncratic syntactic behavior. With respect to the ACI in main declarative clauses, the presence of a given (often pronominal and highly salient) discourse referent in the focus domain disrupts the expected ordering of information and mapping of syntactic function to information status, making the construction a dispreferred one. This markedness is neutralized in relative clauses (and other types of clauses involving *wh*-movement), which explains why restrictions on the use of the ACI are relaxed in those syntactic environments. The NCI enables speakers to create unmarked subjects, equipping them with a convenient tool to bypass the syntactic and information-structural limitations on the first constituents which arose with the rigidification of word order. It is this function, described by Mair (1990) and Noël (1999) for Present-Day English and by Los (2005, 2009) and Dreschler (2015) for older stages of English, that provided the stimulus for its development and expansion in the Early Modern English period. Aligning these insights with the findings from and issues raised in the previous subsection, we find that while Warner (1982) and Fischer (1989, 1992a, 1994) have contributed valuable insights into the initial adoption of the ACI/NCI construction in English, information-structural demands account for the lasting prevalence of NP fronting mechanisms in general, and the passive NCI in particular.

4.3.3.3 Construction-specific semantics and pragmatics

By shifting the focus to the discourse-structuring function of the NCI, which it inherits from the higher-order passive construction, accounts by Los (2005, 2009) and Dreschler (2015) have elegantly demonstrated how grammar may be shaped by communicative needs. However, while their accounts go a long way toward explaining the rise of the NCI in Early Modern English, which secured the construction's survival in the English grammar, the information-rearranging function of the NCI by itself can only partly account for the remarkable distribution of ACIs and NCIs in Present-Day English. Compare the data in Table 4.1. The early modern counts are based on the PPCEME (Dreschler 2015: 370); the studies on Present-Day

English report counts in the Survey of English Usage (Mair 1990) and the (much larger) British National Corpus (Noël 1998, 2001).

Tab. 4.1: Distribution of the ACI and NCI

Period		ACI/NCI (n)	ACI/NCI (%)	Ratio
Early Modern English	(Dreschler 2015)	338/249	57.58/42.42	1 : 0.74
Present-Day English	(Mair 1990)	49/109	29.68/70.32	1 : 2.37
	(Noël 1998, 2001)	4,636/12,971	26.33/73.67	1 : 2.80

Today, the passive NCI makes up 70–74% of all ACI/NCI instances, an increase of roughly 30% compared with the early modern aggregate. Regular passives, by contrast, merely account for 11% of Present-Day English active and passive sentences combined (Francis and Kučera 1982: 554; see also Svartvik 1966: 41; Mair 1990: 159).[17] Two remarks are in place. Mair likens the passive sequence *be supposed to* to a catenative verb and therefore does not include the 63 attestations in his NCI counts (unlike Noël, whose figures include 1,935 examples of passive *suppose*). Including *be supposed to* would further skew the ratio to 1 : 3.73 in favor of the passive. As to Noël's counts, it should be noted that they represent clausal complementation with *to be*, that is, they include copular and auxiliary uses of *be* (e.g. *is thought to be transitory*, *is thought to be used*), but no perfective or infinitival lexical verbs.[18] Nevertheless, this does not detract from the main finding that the NCI is nearly three times as frequent as the ACI, which is highly remarkable in light of the fact that passives are not typically more common than actives. *Believe*-type verbs with *to*-infinitival complements therefore quite clearly defy expectations based on the general distribution of actives and passives.

This difference suggests that there must be another factor, in addition to the discourse-structuring function (which is shared among passives of all types), that helps explain why the NCI caught on so spectacularly. This factor may be found in the semantic-pragmatic meaning conveyed by the construction, which has been

17 It should be noted that this is probably a fairly conservative count, seeing that Francis and Kučera (1982) do not seem to have factored in transitivity in this comparison (intransitive verbs should have been excluded from the comparison since they do not qualify for passivization). The distribution is also sensitive to genre-related differences. Francis and Kučera (1982: 554) report an average of 11% of passives across all text genres, but certain text types deviate quite substantially, e.g. passives account for nearly 22% in texts that were classified as "learned" and for a mere 3.32% in "romance and love story".

18 In his 2001 article, Noël does provide estimates of the proportion of verbs other than (copular/passive) *be* and (perfective/possessive) *have*.

largely glossed over in the historical accounts presented earlier, but has been discussed at length by Noël (most notably, Noël 2001, 2008; Noël and Colleman 2009, 2010). Noël's contributions focus on the NCI as a marker of evidentiality, as in (43). This function is distinguished from two other patterns that the NCI can instantiate, namely a plain passive (44) (i.e. the passive equivalent of an ACI) and an NCI used "descriptively" (45).

(43) *BRAVO, a new on-screen booking system* […], *has entered its launch phase. It* ***is said to*** *offer independent hotels the kind of exposure which hotels in big groups can derive from international booking systems* […]
(A0C 456; Noël 2008: 317; emphasis in original)

(44) *In this book authorities* ***are said to*** *be limited also by the kinds of reasons on which they may or may not rely in making decisions* […]
(ANH 148; Noël 2008: 317; emphasis in original)

(45) […]; *in every poem there are striking effects of word order which, on the one hand, may* ***be said to*** *have been contrived, or willed by the poet* […]
(J7P 44; Noël 2008: 317; emphasis in original)

Even though these three patterns are argued to be separate constructions, they are not treated separately in the quantitative analyses. Disregarding said functional differences, Noël (2008) records a general decline in the use of the NCI between the mid-seventeenth century and the beginning of the twentieth century, but a rise in certain Late Modern English genres, including news, science and medical texts. It is hypothesized that the genre-specific increase in the use of the NCI is due to the expansion of the evidential NCI. This is certainly a claim worth investigating, and one that is complementary to the developments sketched by Los (2005, 2009) and Dreschler (2015). That is, it is possible that after a general expansion of the NCI in Early Modern English resulting from the growing demand for subject-topics, speakers increasingly started to appreciate and exploit the NCI as an evidential strategy. This could then have prompted further change in the usage profile of the NCI. In Chapter 7, I examine if and to what extent the development of the early modern NCI is motivated by semantic-pragmatic considerations.

4.4 Conclusion

The present chapter has elaborated on the early development of the prepositional passive and the NCI construction, placing particular emphasis on the linguistic environments in which these syntactic innovations emerged. It was illustrated how local and global changes conspire in creating the unique linguistic settings

in which these novel patterns come into existence and subsequently mature into conventionalized subtypes of the English passive construction.

The first part of the analysis (Section 4.2) focused on the origins and spread of the prepositional passive. Previous work has traced the origins of the prepositional passive to the thirteenth century. A number of semantic and formal restrictions in the early material points toward a scenario in which the prepositional passive spread by lexical diffusion, though this claim is not uncontested (see e.g. Dreschler 2015). In any case, a substantial number of verbs in the early material examined by Denison (1981, 1985, 1993) belongs to a cluster of semantically and phonologically similar verbs, which suggests that local analogies are at play. In the course of the early modern period, those restrictions are gradually relaxed and the prepositional passive rapidly gains ground, increasing in frequency and extending to new verb-preposition combinations. Another aspect of the prepositional passive's growing productivity concerns its extension to more complex types, involving an interceding element in a V-X-P configuration (e.g. *take heed to*, *cry out on*). Such complex multi-word units or idiomatic phrases were already present in Middle English, but their appearance in prepositional passives was much later than simplex V-P combinations, the first examples dating from the fourteenth century for nominal X-elements (e.g. *take heed to*) and the early modern period for adverbial X-elements (e.g. *cry out on*). In other words, the expansion of the prepositional passive is a gradual one.

While the prepositional passive represents a remarkable syntactic innovation from a cross-linguistic perspective, once language-internal developments and cognitive factors are taken into account, its development does not strike one as particularly disruptive. Reanalysis has traditionally been offered as the primary explanation for the existence of the prepositional passive, but also raises a number of unresolved issues. Inspired by Fischer (2008) and De Smet (2009), I have argued that reanalysis is epiphenomenal to fundamental cognitive processes (e.g. analogy, routinization) that are at work during the construction's spread (but also, today, in language acquisition and the extension to novel V-P combinations). Needless to say, what is entrenched in individuals is conditioned by usage in the speech community. The result is a more dynamic view of V-P collocations, which are characterized as patterns of associations that can have varying degrees of fixedness and compositionality in language (how they are conventionally used), but also across individuals. Whether these flexible processing units come to be used (productively) in the passive furthermore depends on the semantic fit with the passive construction. Language-internal developments such as the extension of preposition stranding also play a role in facilitating the rise of the prepositional passive. By virtue of such bridging contexts, instantiations of the novel pattern are not overly conspicuous.

In the second part of the analysis, I explored the diachrony of the NCI and related constructions (Section 4.3). The NCI construction and its active counterpart (the *believe*-type ACI) first appeared in the late fourteenth century, initially in translations from Latin or Latin-inspired prose. While it is commonly assumed that the NCI and ACI with *believe*-type verbs are calques from Latin, there are also language-internal reasons why these patterns started to appear in English when they did. In particular, it was shown that the native ACI with verbs of permitting and commanding had developed innovative uses, where the NP+INF sequence could be interpreted as a single argument of the verb (e.g. *[order] [him to be released]*), whereas previously such verbs could only prompt a three-place or object control reading (e.g. *[order] [him] [to go]*). These novel usage patterns of native ACIs, characterized by a two-place reading *and* the presence of a *to*-infinitive, facilitated the adoption of the Latin-type ACI into English.

Already in the early material, the passive form (i.e. the NCI) was more common than one would expect given the general division of actives and passives; today, the distribution of NCI/ACIs is highly skewed in favor of the NCI, which is not only more frequent than the ACI, but also used more productively, underlying fewer restrictions regarding the instantiated matrix verbs and infinitival complements. Recent work has linked the rise of the NCI in Early Modern English to the growing demand for topical subjects when word order became more strict and clause-initial objects or adverbials could no longer be used as unmarked discourse links. Information structure also clarifies why the ACI is disfavored: post-verbal elements are typically associated with newness, but the NP in the ACI tends to be given. The observation that the NP+INF sequence in ACI constructions is often relativized, yielding [NP … to V] (e.g. *whom I assume to be*) rather than [NP to V] (e.g. *I assume him to be*), should also be viewed in this light. Passive ACIs (i.e. NCIs) and relativized ACIs comply more naturally with the principles of information flow (see also Chapter 3). Finally, I reviewed the hypothesis that the NCI's increase in certain Late Modern English genres was furthered by an increase in evidential uses, which could be an additional factor in explaining the high incidence of NCIs today. I will come back to this topic in Chapter 7, where I will present the first large-scale quantitative analysis of how the NCI's semantics developed over time.

In brief, this chapter has provided an overview of the linguistic contexts in which the prepositional passive and the NCI emerged, documenting the multifaceted reality of syntactic change. The findings presented in this chapter provide further support for the theoretical claim that grammatical change is non-disruptive (Naro and Lemle 1976; Warner 1982; De Smet 2016a) and relies on resemblance to existing patterns which serve as "supporting constructions" (De Smet and Fischer 2017).

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5 The EMMA corpus

5.1 Introduction

This chapter represents the methodological counterpart to the theoretical exposition in Chapter 2, which delineated several desiderata for a theory of language change, arguing that language is both a cognitive and social phenomenon and should therefore be approached from the dual perspective of the individual and the community. What I present here is a first but necessary step toward a fuller integration of these two dimensions in practice, that is, procuring the necessary resources to enable this kind of research. Specifically, this chapter introduces the corpus of *Early Modern Multiloquent Authors* (EMMA), which implements the ideas presented in Chapter 2. The design and compilation of the EMMA corpus is a joint effort of the ERC-funded research project *Mind-Bending Grammars* (see Appendix, Section 10.1) and forms an integral part of the dissertation that this book is based on. A full discussion of the conceptual decisions and practical implementations at various stages of the compilation process (from text-markup, encoding and data preprocessing to metadata enrichment and verification) can be found in Petré et al. (2019), along with several case studies. The present chapter highlights the main sociolinguistic and methodological principles that underlie EMMA's design and the corpus studies presented in this book, covering the selection criteria for authors (Section 5.2), the metadata (Section 5.3) and sampling methods (Section 5.4) (taken and adapted from Sections 2–4 in our original paper, Petré et al. 2019: 86–104).

5.2 Design principles

5.2.1 Overall structure and objectives

The EMMA corpus comprises the writings of 50 carefully selected authors across five generations, the majority of them London-based intellectuals. As a large-scale specialized corpus, EMMA tries to strike the right balance between big data and sociolinguistic coverage. The texts in EMMA come from various sources, which were converted to a unified format (see Petré et al. 2019 for details on the compilation and formatting procedures). The corpus is designed specifically for the quantitative study of syntactic change across the lifespan of individual language users from various perspectives, including cognitive dynamics of linguistic knowledge, historical sociolinguistics and intragenerational versus intergenerational

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change. While compiled for syntactic research, the corpus lends itself well to all kinds of linguistic research that benefits from the individual perspective.

Along with the corpus, we developed a custom interface that allows users to collaboratively query the corpus and annotate the hits. This interface has been released as the open source package CosyCat (Collaborative Synchronized Corpus Annotation Tool) on GitHub (Manjavacas 2016; Manjavacas and Petré 2017).

5.2.2 Author selection criteria

5.2.2.1 Individual criteria

At the individual level we looked for authors who met three primary criteria related to balance and representativeness. The ideal candidate would fulfill all of these, but in practice not many individuals were a perfect match. In general, we strove for an optimal balance between them. In discussing each criterion we explain what form this balance has assumed in the final corpus.

Tab. 5.1: Author selection criteria

1. The authors produced a large body of work comprising at least 500,000 words.
2. The authors' work is relatively evenly distributed across a long career.
3. The authors show a demonstrable link to London society.

Criterion 1: The authors produced a large body of work comprising at least 500,000 words. We defined 'work' very broadly as all writings that have survived, ranging from personal letters over pamphlets to plays and scholarly treatises. The size of individual oeuvres was estimated on the basis of provisional word counts of all digitized texts in EEBO-TCP (Phase I and Phase II), ECCO-TCP and Evans-TCP, as well as inferred from the number of pages (taking a conservative 250 words/page as guideline) of volumes included in ECCO. The average author in our final selection has an oeuvre of about 1.6 million words (disregarding one outlier, Richard Baxter, who alone has 10.5 million). A few of them did not actually reach the 500,000 word target, as the original estimates on which the author selection was based went down after the identification of duplicates, non-authorial material and foreign language passages. Because of this, John Crowne, Joseph Addison and Benjamin Hoadly ended up slightly below the target. In the case of John Harris, we decided to exclude (except for the preface) his *Lexicon technicum, or, An Universal English Dictionary of Arts and Sciences* (1704). While this is his most famous work, the fact that it is a dictionary marks it as an unsuitable outlier in comparison with his

own writings as well as the writings of his peers. Its size also disrupts the even distribution of work, as it is several times larger in itself than the rest of his oeuvre. While a sample might still have been included, the work involved in transcription and identification of lemmas authored exclusively by him made us decide against this, given the budgetary restrictions we had. The result is that John Harris's oeuvre is rather small (220,000 words). Another author's subcorpus, that of Samuel Clarke, is with 230,000 words in a similar situation. In this case, plenty more is available as dirty OCR, but budgetary limitations prevented us from correcting more. The expansion of these lesser represented authors is an important objective of a future release of EMMA.

Criterion 2: The authors' work is relatively evenly distributed across a long career. Assessments were based on the available texts in our sources, in combination with information from biographical and bibliographical resources (see Section 5.3). We consider an author's career to start, pragmatically, with the text with the earliest text date in our corpus and stop with the last text date. It is possible that some authors had their debut earlier and went on longer, but if these data are not in our corpus, this information is not taken into account. The average length of our authors' active careers is 38 years (sample standard deviation = 11.1 years). Only three authors have an active career of less than 20 years. These are Margaret Cavendish (15 years), George Swinnock (16 years), and Aphra Behn (19 years). Increase Mather was active the longest, with his debut on his twenty-first birthday, and his last work being published 63 years later, in the year he died, at the age of 84. Debut ages range between 18 (George Whitehead) and 34 (four authors), with an average of 26 (sample standard deviation = 4.2 years).

Criterion 3: The authors show a demonstrable link to London society. While this is still a fairly heterogeneous group, and London was becoming more fragmented in the course of the seventeenth century, London citizens have been shown to display a higher number of weak ties as compared to people outside the metropolitan, and to a certain degree a shared London identity may be assumed (Archer 2000; Nevalainen 2015b). Thirty-seven authors spent a considerable amount of time in London, on average 54% of their lives (sample standard deviation = 20%). This average would be even higher if their youth is disregarded. Colley Cibber leads this group, as he only spent five years out of his long life (86 years) outside London. The remaining thirteen authors are not strongly connected socially or geographically to London. Seven of them spent most of their lives in smaller cities or towns in England: John Flavell (Dartmouth as well as other places in Devon), George Swinnock (Maidstone, Great Kimble), Henry More (Cambridge), Daniel Whitby (Salisbury), Thomas Pierce (Oxford and Salisbury), John Bunyan (Bedford), Peter Heylyn (various places in Oxfordshire and Hampshire). Jeremy Taylor was born in Cambridge, but was a cleric in Wales and Ireland for most of his life. Roger

Boyle and Jonathan Swift are somewhat connected to London in that they lived there five and six years respectively, but both spent the majority of their lives in Ireland. Increase and Cotton Mather lived (mostly) in New England (Boston). Finally, Margaret Cavendish, Duchess of Newcastle-upon-Tyne, spent a large part of her life in exile on the European continent because of the Civil War. Despite their weaker ties to the London society, these authors have been included in the corpus, as they may still serve as a control group when looking at the spread of linguistic changes through the London-based social networks of the time.

5.2.2.2 Social criteria

While the three selection criteria listed above pertain to the life and oeuvre of the writers individually, we also paid attention to the relations between the authors in our sample. Many of them exhibit social, political, and stylistic connections to other individuals in the selection. The connections are typically close-knit, i.e. dense and multiplex (Milroy and Milroy 1992: 5), involving multiple communities of practice.

The largest community is probably that of religious leaders, such as Richard Baxter, Gilbert Burnet, and John Tillotson, who were in continuous debate about the desired direction of the English church, a heated topic closely intertwined with national politics ever since the Church of England separated from the Roman Catholic Church in 1534. Another large community was that of playwrights and literary authors, such as John Milton, John Dryden, Richard Steele, and Jonathan Swift. These two communities were in turn closely connected because they moved in similar social circles. Several of them for instance got to know each other at university, as most had an Oxbridge degree. Another obvious connection was the Court. Three of the playwrights in our corpus (William Davenant, John Dryden, and Colley Cibber) became members of the royal household when appointed as Poet Laureates. As many as ten religious authors in EMMA were at some point royal chaplains, and in a similar position. That the two groups talked to each other is for example evidenced in John Dryden referring to John Tillotson as his 'judicious and learned Friend' (in the preface to his *Religio laici*, 1682; see Rivers 2004).

Smaller communities include that of the Quakers (within our corpus included are George Fox, founder, William Penn, who brought Quakerism to the US, and George Whitehead), or the Royal Society (see Gotti 2013; active members in EMMA include Henry More, Robert Boyle, John Tillotson, Gilbert Burnet, John Harris, and Samuel Clarke; people who attended meetings at some point include John Dryden, Margaret Cavendish, Nathaniel Crouch, and William Whiston; Cotton Mather was corresponding member). A more detailed visualization of the social network connections is provided in Section 5.3.2.

At the level of the author selection as a whole, we valued a distribution across different professions. Each generation includes two playwrights,[1] four clerics, one historian, and one scientist (including a mathematician and a doctor). Table 5.2 gives an overview of the authors in the EMMA corpus, their professions and their respective word counts (EM represents a sample of EMMA, see below). It also includes a coarser-grained classification 'main genre', which separates the authors into three major categories: religious authors, narrative authors and 'other' (e.g. scientists, legal writers, etc.). Figure 5.1 visualizes the lifespans of the authors and their active careers.

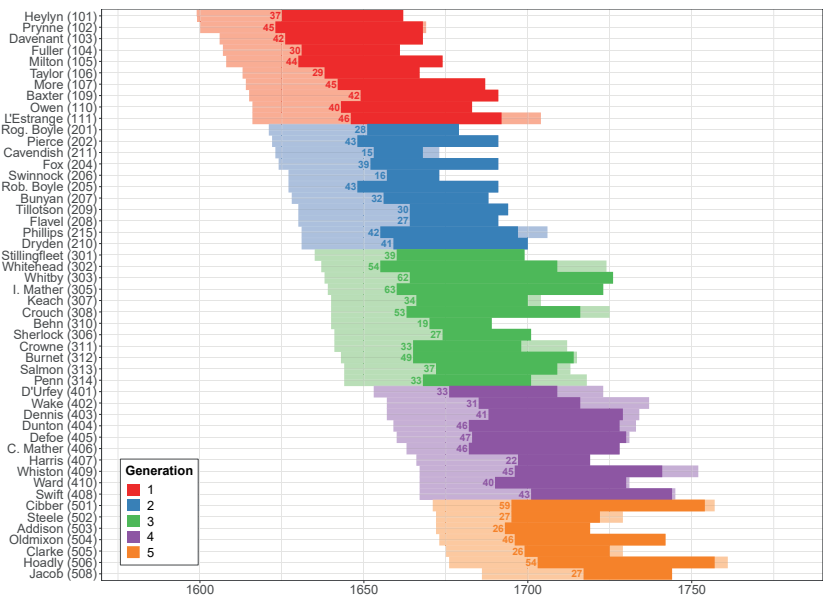

Fig. 5.1: Lifespan and active career of EMMA authors; the darker areas represent the authors' active careers as covered in our corpus (reprinted from Petré et al. 2019: 90, Fig. 1)

1 Due to a lack of more suitable candidates, this includes John Milton in generation 1. Milton wrote some drama and masques, although this is a relatively small part of his oeuvre and is often also not very comparable to that of most of his contemporaries.

Tab. 5.2: Authors in the EMMA corpus

ID	Author	Description	Main genre	EMMA (#wds)	EM (#wds)
101	Heylyn, Peter (1599–1662)	churchman, author	religious	3,712,572	350,793
102	Prynne, William (1600–1669)	lawyer, author, political figure	other	4,957,265	470,377
103	Davenant, Sir William (1606–1668)	playwright	narrative	504,413	339,677
104	Fuller, Thomas (1607–1661)	churchman, historian	religious	2,652,292	275,026
105	Milton, John (1608–1674)	poet	narrative	729,624	307,695
106	Taylor, Jeremy (1613–1667)	cleric, author	religious	3,132,105	303,512
107	More, Henry (1614–1687)	philosopher	religious	1,867,798	523,626
109	Baxter, Richard (1615–1691)	church leader, poet, theologian	religious	10,319,036	437,055
110	Owen, John (1616–1683)	church leader, theologian	religious	4,350,175	419,860
111	L'Estrange, Roger (1616–1704)	pamphleteer, author, politician, Licenser of the Press	other	2,015,050	388,806
	Total generation 1			**34,240,330**	**3,816,427**
201	Boyle, Roger (1621–1679)	soldier, dramatist, politician	narrative	790,412	207,933
202	Pierce, Thomas (1622–1691)	churchman	religious	978,491	280,524
204	Fox, George (1624–1691)	Quaker founder	religious	1,018,398	327,434
205	Boyle, Robert (1627–1691)	natural philosopher, chemist, physicist, inventor	other	2,082,984	545,636
206	Swinnock, George (1627–1673)	churchman	religious	946,926	302,282
207	Bunyan, John (1628–1688)	writer, preacher	religious	1,330,929	326,086
208	Flavell, John (1630–1691)	clergyman, author	religious	1,627,802	283,271
209	Tillotson, John (1630–1694)	Archbishop of Canterbury	religious	507,557	257,053
210	Dryden, John (1631–1700)	poet, playwright, critic, translator	narrative	1,715,258	387,254
211	Cavendish, Margaret (1623–1673)	philosopher, poet, scientist, fiction writer, playwright	narrative	1,393,983	229,557
215	Phillips, John (1631–1706)	translator, secretary to Milton	narrative	1,456,167	339,492
	Total generation 2			**13,848,907**	**3,486,522**
301	Stillingfleet, Edward (1635–1699)	theologian, scholar	religious	2,974,637	396,347
302	Whitehead, George (1637–1724)	Quaker leader	religious	1,284,629	462,586

Tab. 5.2 – continued

ID	Author	Description	Main genre	EMMA (#wds)	EM (#wds)
303	Whitby, Daniel (1638–1726)	theologian, biblical commentator	religious	1,925,091	589,336
305	Mather, Increase (1639–1723)	puritan minister, colonist	religious	1,503,461	583,093
306	Sherlock, William (1641–1701)	church leader	religious	2,076,365	305,775
307	Keach, Benjamin (1640–1704)	preacher	religious	2,102,014	316,099
308	Crouch, Nathaniel (1640–1725)	printer, bookseller, historian	other	1,791,125	257,346
310	Behn, Aphra (1640–1689)	playwright, poet, translator, author, spy	narrative	1,039,596	262,050
311	Crowne, John (1641–1712)	dramatist	narrative	473,022	305,929
312	Burnet, Gilbert (1643–1715)	philosopher, historian, bishop	religious	3,167,554	435,477
313	Salmon, William (1644–1713)	doctor	other	2,889,362	329,378
314	Penn, William (1644–1718)	Quaker, founder of Pennsylvania	religious	1,478,837	325,747
	Total generation 3			**22,705,693**	**4,569,163**
401	D'Urfey, Thomas (1653–1723)	writer, poet	narrative	961,267	344,231
402	Wake, William (1657–1737)	Archbishop of Canterbury	religious	1,143,686	269,423
403	Dennis, John (1657–1734)	playwright	narrative	672,818	373,283
404	Dunton, John (1659–1733)	bookseller, author, publisher	other	1,177,388	300,466
405	Defoe, Daniel (1660–1731)	author, journalist, spy	narrative	4,080,303	455,245
406	Mather, Cotton (1663–1728)	minister, author, pamphleteer	religious	2,465,566	448,243
407	Harris, John (1666–1719)	writer, scientist, priest	other	219,963	219,963
408	Swift, Jonathan (1667–1745)	author, poet, satirist, pamphleteer, cleric	narrative	387,000	290,647
409	Whiston, William (1667–1752)	theologian, historian, mathematician	religious	508,279	335,742
410	Ward, Edward 'Ned' (1667–1731)	satirist, publican	narrative	905,106	316,906
	Total generation 4			**12,521,376**	**3,354,149**

Tab. 5.2 – continued

ID	Author	Description	Main genre	EMMA (#wds)	EM (#wds)
501	Cibber, Colley (1671–1757)	playwright, actor, manager, Poet Laureate	narrative	589,993	423,960
502	Steele, Richard (1672–1729)	writer, politician	narrative	541,503	255,384
503	Addison, Joseph (1672–1719)	essayist, poet, playwright, politician	narrative	487,207	257,840
504	Oldmixon, John (1673–1742)	historian, author	other	942,189	336,473
505	Clarke, Samuel (1675–1729)	philosopher, clergyman	religious	229,619	229,619
506	Hoadly, Benjamin (1676–1761)	clergyman, bishop	religious	425,529	328,077
508	Jacob, Giles (1686–1744)	author, legal writer	other	593,852	250,293
	Total generation 5			**3,809,892**	**2,081,646**
Total				**87,126,198**	**17,307,907**

5.3 Metadata

5.3.1 Text metadata

The texts in EMMA come from various sources (see Appendix, Section 10.1.2, for details). The majority of texts was collected from the various clean text databases transcribed by the Text Creation Partnership (TCP), as well as from Eighteenth Century Collections Online (ECCO). The TCP text databases are EEBO-TCP (Phase I and Phase II), ECCO-TCP, and Evans-TCP. Apart from ECCO-TCP, a couple of hundreds of texts were additionally retrieved from ECCO. In addition to these major sources, a considerable number of texts were retrieved from various sources in the public domain.

Each text comes with a range of metadata. A metadata Excel sheet is packaged with the download of the corpus and the most important text-specific metadata is also stored in the XML header element of the individual EMMA corpus files. Among other things, this includes information concerning the corpus files, including text ID, author ID, title of the (main) text, word counts, text date and genre classification.

Most of the information was automatically retrieved from the EEBO and ECCO databases and is retained under the `<sourceFile>` element. However, great care has been taken in verifying and complementing the metadata, especially date and authorship. We used XPaths to extract parts of texts that should either be retained or excluded in the author corpora, thus using text (rather than the printed volume) as the basic unit of our corpus. Metadata added by the *Mind-Bending Grammars* team are attached to the header under `<corpusFile>`.

Another type of contextual enrichment is genre classification. Genre balance in itself was not a primary criterion, but the corpus contains considerable amounts of text from a wide range of genres that were common in the seventeenth century. The following are represented by at least 50,000 words in every generation: biography, conference, drama, hymns and psalms, legal texts, letters, footnotes, poetry, prayers, scientific texts, sermons, songs, and speeches. The current preliminary classification, which is described in detail in Petré et al. (2019), is inspired by the systems used in the ARCHER and Helsinki corpora, and has been double-checked by comparison with an automatic genre classification tool.[2] For the purposes of this study, authors were classified into three major categories according to their main genre: religious authors, narrative authors and 'other' (e.g. scientists, legal writers, etc.).

2 Developed in collaboration with MA student Arthur Nieuwland during an AI internship at *Mind-Bending Grammars*.

5.3.2 Author metadata

In addition, a more extensive author metadata database is underway with rich biographical information on each author. This includes information on birth and death dates, birth place, social circles, political and religious orientation. It also includes quantifiable social network information and the mobility history of each author.

Figures 5.2 and 5.3 illustrate how this metadata can be sensibly quantified. Both show the social network connections between the individuals in EMMA. The first visualizes live connections between the individuals, trying to provide an approximate answer to the question: how often did they meet each other in real life? The second visualizes the citation network of our individuals: how often did they cite each other? Of course these networks should not be considered as self-contained autonomous wholes. Rather they represent snapshots of larger networks (such as the literary scene, the community of clergymen, London), and should be interpreted in this light.

Similar to the approach found in Bergs (2005: 55–70) and Sairio (2009), we have assigned weights to network ties, but our approach differs in assigning tie strength in a more data-driven way. The different procedure is motivated by the different nature of the sources. Both Bergs (2005) and Sairio (2009) analyze correspondence, where influence between informants is tested on the basis of letters they wrote to each other, and is mostly concerned with interactional accommodation. The connections that we can establish between informants in EMMA are generally of a more indirect nature. In integrating actual mentions rather than establishing tie strength on the basis of a global biographical and social profile, the aim is to inform analyses of converging (or diverging) behavior between individuals that resulted from interactions that are essentially invisible to us. Examples are the adoption of someone's idiosyncrasies by a friend (live) or an admirer (in reading), or shared language use typical of one of the communities of practice represented in EMMA, such as that of the Quakers.

Both the networks visualized in Figures 5.2 and 5.3 were calculated using the same methodology. For each individual we counted the number of times any of the other individuals was mentioned in (i) their biography pages on Wikipedia and the *Oxford National Dictionary of Biography* combined; (ii) their own written work in EMMA. For each mention it was decided what the kind of connection was. This decision was always informed by the context. For instance, from the following reference of Gilbert Burnet (ID 312) to Richard Baxter (ID 109), we can infer that they knew each other only from certain society meetings, but not at all closely. Hence Burnet's surprise that Baxter has witnessed against him in a fairly serious allegation of treason.

> The Witnesses cited against me are first [...] and for the last, Mr. Baxter, I have had no Correspondence at all with him these two and Twenty Years; unless it was that once or twice I have met him by accident in a [Visit] in a third place, and that once about six Years ago I went to discourse with him concerning a matter of History in which we differ'd; but as all our Conversation at that time was in the presence of some Witnesses so it was not at all relating to matters of State. (Burnet. 1687. *Six papers by Gilbert Burnet*.)

Consequently this mention is tagged as 'society'. Connection types were based on the kind of connections that were attested in our sources, and include (for example) (paper) friend, (paper) ally, (paper) opponent, classmate, colleague, professional collaboration, professional connection, family, Quaker, supporter/supportee, admirer/admired, influencer/influenced, imitator, audience (context of preaching), reader, or reviser. We then ranked these types by assigning weights. This procedure was motivated by the likelihood of a misbalance between the frequency of mentions in our sources and the frequency of contact in reality. Family ties and friendships will generally be less reported on in the sources we have than, for instance, opponents, allies, or professional collaborators. To compensate for this, family and friend mentions received a weight of 2. Similarly, citations of admiration received a slightly higher weight of 1.25 than neutral citations (weight of 1), under the assumption that admiration triggers imitation. Indirect or distant mentions (e.g. someone repeating some rumor about someone else) received a weight of 0.75. These weights are currently assigned intuitively, but generally in line with the more sociologically informed study by Sairio (2009).

After assigning these weights to each mention, the weighted numbers were then added up (for each of the categories 'live' and 'citation/paper mention'). The resulting number was normalized by dividing it by that individuals' corpus size and size of the biography. Finally, normalized numbers were divided into ten ranked bins. These ranks for each (directed) pair of individuals was then, finally, fed into the Force Atlas 2 algorithm available in the Gephi software package (Bastian et al. 2009), leading to the visualizations in Figures 5.2 and 5.3.

The most obvious difference between the two networks is their density. This is partly the natural consequence of the fact that early and late generations often cannot have met, because they were never contemporaries (at least not as adults). Partly it may be the result of the lack of appropriate sources. While a citation network based on a near-exhaustive sample of published work can be expected to be fairly representative, live connections are harder to accurately cover with these resources. It would be interesting to add the information of their private unpublished correspondence, and in general a more principled methodology can be envisaged, but designing and implementing such a methodology would require a separate research project beyond our current scope.

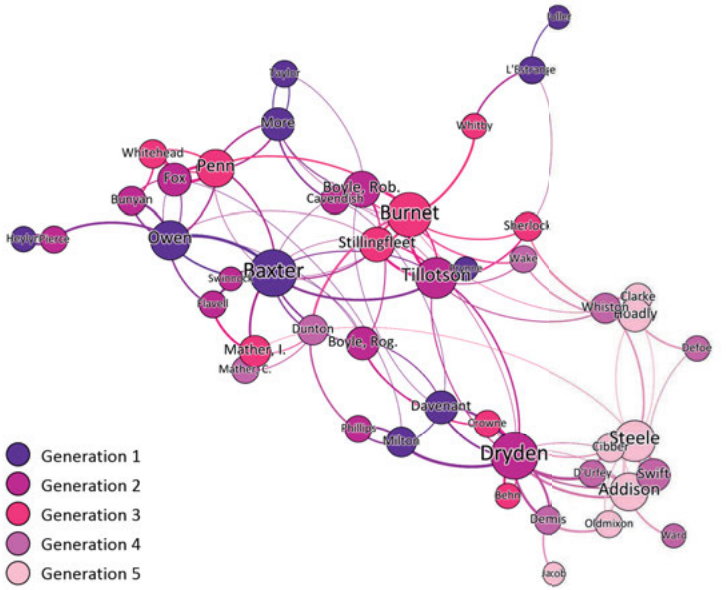

Fig. 5.2: Network of live social connections between EMMA informants (reprinted from Petré et al. 2019: 102, Fig. 4)

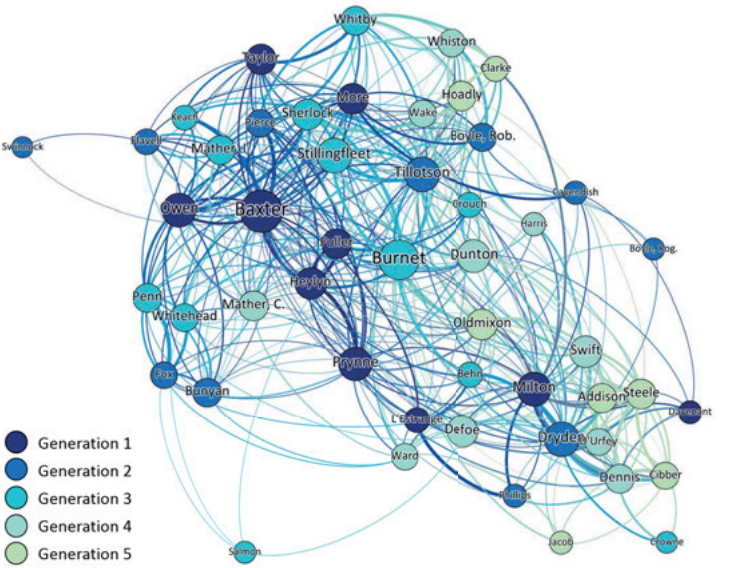

Fig. 5.3: Network of citation and mention connections between EMMA informants (reprinted from Petré et al. 2019: 103, Fig. 5)

Apart from the difference in density, there are also obvious parallels. In both networks the central figures are among the most influential leaders in their circles. Richard Baxter, John Tillotson, Edward Stillingfleet and Gilbert Burnet were the most important religious leaders in their time. John Dryden does credit to his reputation (the seventeenth century is also commonly referred to as the age of Dryden). Other influential authors such as John Milton or Addison and Steele are also central, but less so, perhaps because they are born in the first and last but one generations, whereas Dryden is situated in the middle generation. Finally, while the citation network shows that all individuals in EMMA are interrelated on paper, the live network does not contain all our authors. Some authors, such as William Salmon, a doctor derided by colleagues as "the King of Quaks" (Hanson 2009: 118), were apparently quite isolated from the social circles to which most of EMMA's authors belonged.

5.4 Text- and author-based samples

Depending on the object one wishes to study, EMMA's unprecedented size may mean that a selection of the corpus will have to be used, as the phenomenon under investigation might be too frequent to be examined exhaustively within the scope of a single research project. This is true for the case studies presented in Chapters 6 and 7, which, for reasons of feasibility, do not analyze all material available in the EMMA corpus. In the final section of this chapter, I provide an overview of how the samples for the individual case studies were obtained.

There are two principle ways to go about sampling when using EMMA, each with its own advantages and drawbacks: one could either limit the number of texts (text-based sampling) or the number of authors (author-based sampling). For questions relating to the interaction between the individual and community, text-based sampling has the advantage that all authors are included so that the social structure that characterizes the EMMA corpus is fully retained. When lifespan change is of principle interest, the corpus size per author matters and individual corpora should preferably be retained in their entirety. For the purposes of this study, then, the material was selected in such a way that both the research question about the interaction between the individual and the community and the one about lifespan change can be fully addressed by at least one case study.

Two different types of samples were created as a result: a text-based selection (for the case study on the prepositional passive) and an author-based selection (for the case study on the NCI). While both case studies shed light on aspects of lifespan change and the dynamic relation of unique and shared knowledge, the data selected for the NCI case study have the most fine-grained longitudinal

resolution and are therefore particularly suited to address questions of lifespan change; the data set for the prepositional passive incorporates the entire EMMA network and as such allows for an in-depth study of the connection between individual- and community-level change.

The text-based sample contains material for all 50 authors based on a principled selection of the available texts in EMMA. This has resulted in a 17-million-word sample called EM for *EMMA Medium*, which is about 1/5 of EMMA's full size. Each author's active writing career was divided into five-year periods (starting from the earliest text) and for each period a sample of ca. 50,000 words was compiled, whenever possible consisting of a couple of texts across those five years rather than one large text. Deviations were allowed for when the material was not available in those periods or if the author wrote relatively few, but large works. In that case, I generally included more words per period by selecting parts of the larger work to make up for distributional gaps. Across periods, I aimed for a relatively constant genre distribution. A sample established this way ensures that all stages in an author's career are well represented, but also entails that authors with longer careers make up a larger proportion of the EM corpus. This choice is warranted because authors with a long career transcend generational cohorts to a greater extent than do authors with a shorter career, increasing their potential to exert sociolinguistic influence on the community as a whole. On average, the 50 individual corpora comprise ca. 350,000 words each and none of the individual corpora falls below 200,000 words. Despite being more limited in scope than EMMA, EM has the benefit of providing a more evenly distributed data set across individuals and periods (EMMA's goal, by contrast, was to include all available material per author and period). Totaling 17 million words, the sampled corpus remains a solid foundation for studying high- and mid-frequency phenomena. The EM corpus is fully compatible with EMMA (indices of the data points are co-referential) and can be used as a stand-alone corpus. It will become available with the second release of EMMA. The EM word counts are included in Table 5.2.

The sample used for the second case study is author-based rather than text-based, and retains all available writings for six authors per generation in EMMA (30 authors in total). While a generational comparison is not of primary importance to the examinations in the chapter on the NCI, each sampled generation includes two or three narrative authors to avoid a generational genre bias. In total there are 12 religious authors (IDs 104, 106, 110, 204, 207, 209, 302, 305, 402, 406, 409, 506), 12 narrative authors (IDs 103, 105, 201, 210, 310, 311, 401, 403, 408, 501, 502, 503) and 6 authors belonging to other professions (IDs 111, 205, 308, 313, 504, 508). The writings of these 30 authors amount to nearly 40 million words (see Table 5.2 for individual corpus sizes).

6 The prepositional passive

6.1 Introduction

This chapter explores how cognitive and social processes jointly shape language and give rise to its distinctive quality of being both systemic and dynamic. The expansion of the prepositional passive in Early Modern English serves as a case study. The aim of this chapter is twofold. Its descriptive aim is to provide an in-depth analysis of the development of the prepositional passive in the seventeenth and eighteenth centuries from the dual angle of the individual and the community. The related theoretical aim is to advance our understanding of how micro- and macro-systems dynamically interact.

As documented in Chapter 4, prepositional passives are a syntactic innovation of Middle English, but their main rise is situated in Early Modern English, when they significantly increase in frequency and extend to more complex types. Due to its lengthy expansion phase, the prepositional passive lends itself well to the study of longitudinal change in individuals and long-term conventionalization processes. In other words, the case study of the prepositional passive allows us to gain deeper insight into the relation between collective change and entrenchment (i.e. the cognitive processes that modulate linguistic knowledge in individuals).

I will start this inquiry in Section 6.2 by presenting some methodological considerations and practical details on how the corpus study was conducted. The following sections discuss the results of the analysis, which is guided by three sub questions relating to the central theoretical objective:

1. Where does change reside? Does linguistic change only occur between generations or does it also take place during the lifetimes of individual speakers?
2. What is the role of entrenchment and conventionalization in long-term change?
3. To what extent is interindividual variation socially stratified? In what way is linguistic behavior influenced by membership of a community of practice and social network relations?

The first part of the analysis (Section 6.3) examines the role of individuals in the emergence of community change and aims to establish whether change is merely a function of a changing population (generational change) or also of lifespan change (intragenerational change). Because frequency of usage plays such a prominent role in language change as both a driving and conservative force, this section concentrates on frequency developments at various levels of social structure: from aggregate community trends to variation and change at the individual and generational level. Further analysis, presented in Section 6.4, links the findings to

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usage-based theory by examining the (socio-)cognitive and linguistic effects of repeated usage. More specifically, I investigate the effects of type repetition (entrenchment and conventionalization of the prepositional passive schema) and token repetition (entrenchment and conventionalization of V-P combinations), providing a cognitively informed explanation of linguistic change. Because variation may be socially stratified (and several trends in the first Sections 6.3 and 6.4 are suggestive of this), Section 6.5 inquires to what extent linguistic behavior reflects social membership and social network proximity. The chapter concludes with a summary of the findings.

Among other things, it is demonstrated that language change results from the complex interaction between individual speakers, who, though accommodating to the general conventions of their communities of practice, show considerable interindividual variation and may change their linguistic behavior to varying degrees. The results are indicative of a change that is driven by usualization and entrenchment (see Section 2.4.1), thus giving substance to the view that mere frequency shifts in individual or collective usage can lead to long-term change in a construction's usage profile (cf. Schmid 2020: 337).

6.2 Data and methodology

6.2.1 EMMA sample

The general principles underlying the design and compilation of the EMMA corpus were presented in Chapter 5. For this case study, I will briefly recapitulate how the EMMA corpus was deployed. A preliminary step in the analysis of the prepositional passive was the creation of the EM corpus, a text-based sample of the EMMA corpus that is roughly one fifth its size (17 vs. 87 million words). The creation of this 'light' version is one of two strategies employed in this work to increase the feasibility of data retrieval and analysis without impacting the overall structure and objectives (see Section 5.4 for a comparison with the author-based approach to sampling).

As laid out in Section 5.4, the texts were selected in a way that homogenizes the distribution of the available material in EMMA across the authors' lifetimes. Thus, for each five-year period in an author's career, 50,000 words were selected, ensuring that all stages in an author's career are well represented. This way of sampling, however, also means that authors with comparatively long careers account for a larger proportion of the EM corpus. As pointed out in Section 5.4, this choice is justified because authors with a long career transcend generational cohorts to a greater extent than do authors with a shorter career, increasing their potential to exert sociolinguistic influence on the community as a whole.

6.2.2 Queries

6.2.2.1 Primary data set

The primary data set comprises 5,701 instances of the prepositional passive. Table 6.1 presents their distribution across the 50 authors in the corpus, along with the word counts of the individual corpora. The remainder of this section provides a general outline of the query procedures and describes some of the obstacles that are involved in finding underspecified patterns in large corpora.

Tab. 6.1: Primary data set: Attestations (n) of the prepositional passive by author

ID	Author	EM (#wds)	n
101	Heylyn, Peter (1599–1662)	350,793	135
102	Prynne, William (1600–1669)	470,377	110
103	Davenant, Sir William (1606–1668)	339,677	45
104	Fuller, Thomas (1607–1661)	275,026	66
105	Milton, John (1608–1674)	307,695	54
106	Taylor, Jeremy (1613–1667)	303,512	107
107	More, Henry (1614–1687)	523,626	166
109	Baxter, Richard (1615–1691)	437,055	100
110	Owen, John (1616–1683)	419,860	253
111	L'Estrange, Roger (1616–1704)	388,806	150
	Total generation 1	**3,816,427**	**1,186**
201	Boyle, Roger (1621–1679)	207,933	29
202	Pierce, Thomas (1622–1691)	280,524	78
204	Fox, George (1624–1691)	327,434	94
205	Boyle, Robert (1627–1691)	545,636	351
206	Swinnock, George (1627–1673)	302,282	38
207	Bunyan, John (1628–1688)	326,086	108
208	Flavell, John (1630–1691)	283,271	40
209	Tillotson, John (1630–1694)	257,053	71
210	Dryden, John (1631–1700)	387,254	40
211	Cavendish, Margaret (1623–1673)	229,557	27
215	Phillips, John (1631–1706)	339,492	112
	Total generation 2	**3,486,522**	**988**
301	Stillingfleet, Edward (1635–1699)	396,347	173
302	Whitehead, George (1637–1724)	462,586	183
303	Whitby, Daniel (1638–1726)	589,336	146
305	Mather, Increase (1639–1723)	583,093	292
306	Sherlock, William (1641–1701)	305,775	51
307	Keach, Benjamin (1640–1704)	316,099	70
308	Crouch, Nathaniel (1640–1725)	257,346	104
310	Behn, Aphra (1640–1689)	262,050	40

Tab. 6.1 – continued

ID	Author	EM (#wds)	n
311	Crowne, John (1641–1712)	305,929	29
312	Burnet, Gilbert (1643–1715)	435,477	251
313	Salmon, William (1644–1713)	329,378	57
314	Penn, William (1644–1718)	325,747	84
	Total generation 3	**4,569,163**	**1,480**
401	D'Urfey, Thomas (1653–1723)	344,231	30
402	Wake, William (1657–1737)	269,423	118
403	Dennis, John (1657–1734)	373,283	78
404	Dunton, John (1659–1733)	300,466	116
405	Defoe, Daniel (1660–1731)	455,245	249
406	Mather, Cotton (1663–1728)	448,243	271
407	Harris, John (1666–1719)	219,963	63
408	Swift, Jonathan (1667–1745)	290,647	108
409	Whiston, William (1667–1752)	335,742	175
410	Ward, Edward 'Ned' (1667–1731)	316,906	37
	Total generation 4	**3,354,149**	**1,245**
501	Cibber, Colley (1671–1757)	423,960	69
502	Steele, Richard (1672–1729)	255,384	90
503	Addison, Joseph (1672–1719)	257,840	107
504	Oldmixon, John (1673–1742)	336,473	157
505	Clarke, Samuel (1675–1729)	229,619	99
506	Hoadly, Benjamin (1676–1761)	328,077	198
508	Jacob, Giles (1686–1744)	250,293	82
	Total generation 5	**2,081,646**	**802**
Total		**17,307,907**	**5,701**

The corpus was queried in CosyCat (see Section 5.2.1) by means of regular expressions. For various reasons, retrieving instantiations of the prepositional passive was not a trivial task. One aspect that complicated the search is the lack of tagging beyond tokenization: the data were obtained from the first release of the EM corpus (2018), which is not parsed nor POS-tagged, lemmatized or normalized for spelling. This means that one has to resort to using wildcards (which may increase the number of irrelevant hits) or specify lists of historical spelling variants (e.g. long *s*,[1] *vv* for *w*) and other types of alternants (e.g. verb forms). This is not much of a problem with single-word searches, but gets amplified when the desired pattern is a construction with variable slots. The nature of the prepositional passive, which strings

1 While the long *s* spelling is retained in the corpus, it is replaced by a regular *s* in the examples in this book because the unicode character does not display in combination with `pdflatex`. Other spellings, e.g. *vv* for *w* or *v* for *u*, have been retained.

together high-frequency forms (forms of *be*) and a wide range of verb-preposition sequences (including types with interceding elements such as *do away with*), is of the latter kind. Furthermore, the vast majority of hits that instantiate a participle followed by a preposition do not represent a passivized prepositional verb. Much more often prepositions pattern syntactically with a subsequent nominal phrase to express spatial, temporal or metaphorical relations, or, for specific prepositions, to introduce specialized arguments or adjuncts such as *to*-infinitives or agentive *by*-phrases. As Cuyckens and Radden (2002: xiii) note, "more than any other word class, prepositions [...] are multiply polysemous". Some prepositions also display formal overlap with adverbial particles (e.g. *in*, *on*, *up*, *through*).

Because the EM corpus is considerably smaller than the EMMA corpus, it was imperative that the queries be maximally inclusive. To maximize recall, highly generic querying patterns were used that specify a form of the verb *be* followed by a word that ends in *-d*, *-t* or *-n* (i.e. a possible participle) within a three-word-window and a preposition (one of 35 different prepositions) with up to three words in between (in order to also retrieve complex prepositional passives). Separate queries were conducted for irregular participles (e.g. *made*, *done*, *-ung*, *-unk*, etc.). Overall precision (accuracy of the search) for such queries is extremely low: only around 2% of the hits are prepositional passives. To facilitate the annotation process in CosyCat, separate queries were conducted: RESTRICTED queries optimize precision by modifying the regular expression so that the preposition is followed by a punctuation mark. This yields fewer hits with higher precision. For the query with the preposition *upon*, for instance, accuracy is ca. 80%. For prepositions with an adverbial equivalent (e.g. *in*, *on*), precision is generally lower. The examples given in (1)–(2) illustrate some prepositional passives that were found by means of RESTRICTED queries.

(1) *Sinner, so, Even so, art thou **Cried after**;*
(n00981, Cotton Mather, 1704)

(2) *Where the Tenter-hooks of Oppression alwayes are in such publick View, that Man, Woman, or Maid can hardly pass by Woodstreet or the Poultry, without being **catchthold of**.*
(11244234, John Phillips, 1675)

Irrelevant hits include patterns that exhibit structural similarity with the prepositional passive, most notably preposition stranding in other contexts, e.g. (3).

(3) [...] *yet I must earnestly press you to do something this way, and that according to the several Capacities and Abilities you are **endowed with**.*
(0098206000, John Harris, 1705)

Next, EXTENDED queries were conducted to retrieve prepositional passives *not* followed by a punctuation mark. The bulk of examined hits are irrelevant (4)–(5), but a small percentage exemplifies the construction of interest (6)–(7).

(4) *The Lynx shall cast its Skin at her Feet to make her a Tippet; the Peacock, Parrat and Swan, shall pay Contributions to her Muff; the Sea shall be* ***searched for*** *Shells, and the Rocks for Gems;*
(k098900003.0, Joseph Addison, 1710)

(5) *Let them be* ***watched at*** *markets and fairs,* [...]
(1492800700, Jonathan Swift, 1724)

(6) [...] *the King was hardly* ***prevail'd with*** *not to believe it.*
(0127500500, John Oldmixon, 1716)

(7) *And I am apt to think that a few Hints may be* ***met with*** *here* [...]
(0135700300, John Harris, 1703)

Finally, after this elaborate manual inspection for false positives and the analysis of relevant instances, every verb-preposition combination found in the prepositional passive (542 types)[2] was queried for separately without a form of *be* to also retrieve instances of conjunction, where auxiliary verb and participle might be far apart, as in (8) and (9).[3]

(8) *Were not some of them, to prevent their Evidence, ship'd off, and never* ***heard of*** *more; and others strangely tormented?*
(0127500500, John Oldmixon, 1716)

(9) *That the TABLE of the LORD, may be more Generally, and after the most worthy manner* ***Approach'd unto****.*
(n01479, Cotton Mather, 1715)

6.2.2.2 Secondary data set

While the major part of the results sections draws on the primary data set, a smaller part of the analysis, presented in Section 6.4.2, zooms in on the entrenchment of

2 This includes complex verb-preposition combinations with an interceding element, e.g. *go through with*, *make a prey upon*, *make light of*.

3 Recently, new methods have been applied to diachronic corpora that have the potential to speed up low-precision queries for constructions like the prepositional passive (Fonteyn 2019; Verheyen et al. 2019). These methods combine similarity-based metrics (e.g. neural networks) with iterative learning to retrieve new hits based on a training set of labeled hits, thus offering a promising approach to augment structural searches in large-scale corpora.

V-P combinations that occur in the prepositional passive. By doing so, it will be possible to establish how usage intensity in the active relates to usage intensity in the prepositional passive. For this part, all the active forms of V-P combinations that occur in the prepositional passive were retrieved based on regular expressions that combine individual verb stems with the possible endings followed by the relevant preposition. The hits were then manually inspected so that only relevant instances of the V-P occurrence are retained. Irrelevant examples include, but are not limited to, nominal uses (e.g. *the accounts of that time* for a query with ACCOUNT OF), *to*-infinitival uses (e.g. *I have written to let you know* for a query with WRITE TO) and agent or instrumental *by*-phrases (e.g. *this may most times be done by inspection* for a query with DO BY).

For reasons of feasibility this additional study was restricted to generations 1 and 2, comprising 21 authors. 395 different V-P combinations that were attested in generations 1 and 2 were queried for and annotated, totaling 27,732 active instances. The lemma queries used to retrieve all active instances also yielded clipped prepositional passives (i.e. prepositional passives without *be*), which have been annotated in the process and are included in this supplementary study. Table 6.2 presents an overview of the secondary data set.

Tab. 6.2: Secondary data set: Attestations (n) of passivizable V-P combinations in passive and active constructions

Construction	Generation	n
Passive	1–2	
Prepositional passive		2,174
Prepositional passive, clipped		615
Active	1–2	27,732
Total		**30,521**

6.2.3 Annotations

The corpus query engine (CosyCat) does not only display hits as keywords in context (KWIC), it also allows users to annotate relevant instances directly as key-value pairs. The retrieved instances of the prepositional passive were annotated for a range of formal and semantic variables. Besides annotations of single tokens, key-value annotations may span multiple adjacent tokens to capture constituents

or syntactic constructions. An example of a relevant hit that is annotated in this way can be found in the Appendix (Figure 10.1).

The basic annotations are as follows. The key PASSIVE-CXN tags the passive clause, and serves as the master key annotation. Its values distinguish between NCIs and two types of prepositional passives, i.e. simplex and complex prepositional passives: [SBJ *be* V-*ed* P] *vs.* [SBJ *be* V-*ed* X P]. Next, the various construction elements within the passive construction received the key tag CXNELE and their respective syntactic functions as values, e.g. [S] for subject, [BE] for copula, [Vptc] for participle of the main verb, [X] for interceding element in a complex prepositional passive, [P] for preposition, and different values for different types of agent or instrumental phrases. Each of these tokens or spans received additional tags that specify semantic and/or formal properties. These include ANIMACY, DEFINITENESS, LEMMA, CLAUSE TYPE, NEGATION, and other variables that only apply in specific cases (e.g. the syntactic type of interceding element in complex prepositional passives). I also tagged spans that indicate dependencies such as modal constructions (MODAL-CXN, e.g. [CAN V], [WOULD V]) and perfect constructions (PERFECT-CXN, e.g. [HAVE V], [HAD V]). Another phenomenon that is fairly common with prepositional passives is coordination (COORD-CXN) with transitive verbs (10) (including transitive phrasal verbs) or other prepositional passives (11)–(13), which may occur in various constellations. I marked the type of coordination as a value of COORD-CXN, and the POSITION of prepositional passive (before, in between or after the transitive verb).

(10) *and what Part thereof hath been **sold** and **disposed of***
(0409100501, Giles Jacob, 1730)

(11) *And because some persons at some time Swear truly and sincerely, therefore the same persons may not be **tamper'd with** and **prevail'd upon** at some other time to be Perjur'd.*
(a47891.4, Roger L'Estrange, 1681)

(12) *Yet all those multitudes of Fish and Fowl, both in Sea and Land, are **cared** and **provided for***
(a39673.0, John Flavell, 1664)

(13) *If the name of Iesus be thus to, be **bowed to** and **at;***
(a10179, William Prynne, 1636)

In general, value labels may be highly specific in the annotated instances because they can easily be merged into higher-order categories during the data analysis stage. All single key-value pairs are stored as documents in a mongoDB database,

the contents of which can then be queried and transformed for statistical analysis.[4] In the remainder of this chapter, I present and discuss the results of the various analyses in accordance with the three central research questions introduced at the beginning of this chapter.

6.3 The rise of the prepositional passive

This section reports on the frequency development of the prepositional passive in the work of fifty early modern writers. By examining the role of individuals in long-term linguistic change, rather than simply describing communal trends, this study aims to shed light on the workings of language as a complex adaptive system, which involves the dynamic interaction of micro- and macro-systems. Unlike most work on language change, developments at the aggregate level are enriched by insights of cohort effects (five generations of speakers) and individual agents in the system, whose linguistic trajectories are traced longitudinally over an average career of 38 years (sample standard deviation = 11.1 years). The remainder of this section elaborates on the diachronic development of the prepositional passive along these three dimensions (community – cohort – individual), and demonstrates how each level of abstraction is necessary to fully understand language change.

In a recent corpus study based on the PPCEME, Dreschler (2015: 353) documents the remarkable rise of the prepositional passive over the course of the early modern period, during which its frequency triples (1.5 million words, 243 attestations). The EM corpus provides a snapshot of the later part of this period, extending into the first half of the eighteenth century. EM's size (17 million words) allows us to establish a much more refined picture of developments at the aggregate level. Results from the EM corpus corroborate previous claims of the prepositional passive's rapid spread in Early Modern English (Visser 1973; Dreschler 2015). This is illustrated in Figure 6.1, which traces the normalized frequency of the prepositional passive over a period of roughly 140 years. Taking the pooled period totals as input for a linear regression model, we find that the rate of community change is 25.35, that is, with each 10-year period, the average increase in the mean normalized frequency of the prepositional passive is about 25 units (cf. Appendix, Table 10.1).

Since the community trend is straightforward and in line with the results of previous, smaller-scale corpus studies, I will immediately turn to the main interest of this study: how do ongoing community change (as evidenced in Figure 6.1)

4 Python was used to retrieve the data from the database. Subsequent data wrangling as well as all statistical analyses and visualizations were done in R.

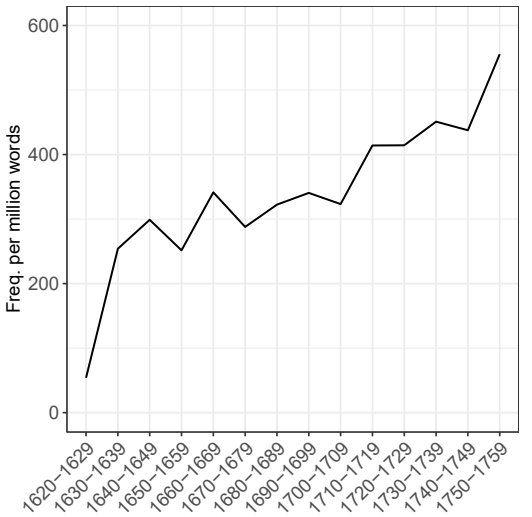

Fig. 6.1: Normalized frequency at the community level (reprinted from Anthonissen 2020a: 320, Fig. 2)

and individual behavior intersect? Figure 6.2 is a boxplot of the distribution of normalized frequencies per generational cohort, where each data point (symbolized by a rug on the y-axis) represents the normalized frequency of one author, color-coded by this author's primary genre. An X-symbol was added to represent the generational average.

Focusing on the individual data points (the rugs) and disregarding for now the generational differences, we can observe a large amount of individual variation: authors' normalized frequencies represent a cline spanning a relatively wide range, where the author with the highest normalized frequency uses the construction seven times more often than the author with the lowest normalized frequency. The color of the rugs classifies authors according to their prototypical genre, distinguishing two primary groups (NARRATIVE and RELIGIOUS authors) and a mixed bag (OTHER) with authors that do not fit either category.[5] While the division is a rather crude one, it appears that narrative authors tend to use the prepositional passive less frequently, presumably because the passive construction in general is less prevalent in narrative genres (cf. Francis and Kučera 1982: 554).

5 In Section 6.5, I will discuss this distinction in more detail, arguing that it is closely associated with the social unit of a community of practice.

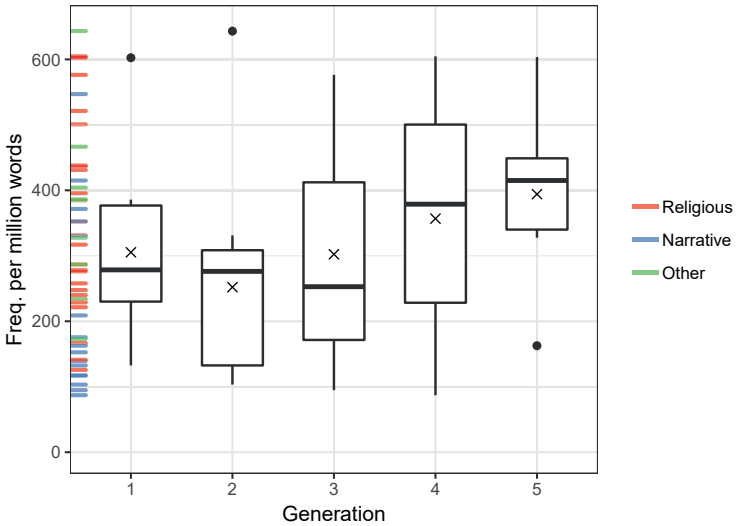

Fig. 6.2: Distribution of normalized frequencies per generation (reprinted from Anthonissen 2020a: 321, Fig. 3)

Several insights can be gleaned from the frequency distribution per generation. Although each generation contains authors with comparatively high or low frequency rates, averaging their frequencies reveals a clear pattern: successive generations of writers advance the frequency of the prepositional passive beyond that of the earlier-born cohort (with the exception of generation 1). This cohort effect is in line with Labov's (2007: 346) incrementation model of change, extending its validity from morphophonological to syntactic change. A more refined picture of this generational change emerges from the distribution of individual values across the five generations. The boxplot shows that the median values are more or less stable between generations 1 and 3. A large leap in frequency occurs between generations 3 and 4, followed by a smaller increase in generation 5. Comparing these results with the range of variability per generation, we may conclude that the strongest growth in the prepositional passive (the leap between generations 3 and 4) occurred when interspeaker variability was at its greatest. This finding may be related to previous work by Nevalainen et al. (2011) and Fonteyn (2017), whose case studies on linguistic alternations also show a correlation between variability and change. The figures in Fonteyn's paper on the development of the gerund alternation suggest that speakers' proportional use of the competing variants was most varied when the change accelerated. Referring to a study by Kurki (2005), Nevalainen et al. (2011) have also pointed out that the mid-range phase of an

S-curve change, where the rate of change is maximal, is characterized by high interspeaker variability.[6]

Having established that generational change is instrumental in the rise of the prepositional passive, I will now seek to determine whether generational change is accompanied by lifespan change. Even though usage-based constructionist theories in principle subscribe to the claim that speakers continue to adapt as their linguistic knowledge is reshaped by experience, empirical studies of longitudinal change within individuals are scarce, particularly in the domain of syntax (see Chapter 2). With a per-author corpus size of 350k words and 114 attestations on average, EM provides us with reasonably robust lifetime data.

The authors' lifespan developments of normalized frequency are plotted in Figure 6.3. Each of the 50 panels represents one author, who can be identified by means of his or her author ID. Note that the ID also entails information about the generation to which the respective authors belong: the first number signifies one of five generations. If the corpus size for a particular age range is below 25,000 words, data points are considered to be less robust and are therefore unconnected. The color legend indicates the rate of change as computed by taking the first and last robust periodical value. For a small group of authors with widely fluctuating usage across the lifespan (e.g. IDs 101, 308, 402, 508) this approach is not ideal, but for the others it gives us a reliable indication of the general trend.

Here and elsewhere in this work the normalized frequencies are computed for age bands rather than decades because they can be more naturally aligned with most authors' careers, that is, age bands reflect the most optimal distribution for comparison across a typical career. Creating age ranges was particularly helpful for the early career stage because EMMA authors typically only start publishing in their mid-twenties (average = 26; sample standard deviation = 4.2 years; see Chapter 5); a decade-wise comparison in this early career stage would lead to sparsity problems.

Figure 6.3 demonstrates that there is quite some inter- and intra-individual variability. 19 authors are more or less stable (i.e. their rate of change is less than ±25%), 3 show a moderate downward trend, 8 authors show a strong decline (more

6 Interestingly, there appears to be a parallel between how language as a complex adaptive system 'learns' and how we ourselves come to develop and reorganize our mental grammars. For instance, one study shows that, within a single month, one German child produced a variety of forms (*Voge-n*, *Vogel-n*, *Vögel-n*; *Huhn-e*, *Hühn-e*, *Huhn-er*) as the plural nouns for *Vogel* 'bird' and *Huhn* 'chicken' before settling on the targets *Vögel* and *Hühn-er* (Behrens 2002). Studies on language development (in both L1 and L2) consistently point out that "variability within a system is a precursor of change and of subsequent development" (Verspoor and Behrens 2011: 36; see also van Geert and van Dijk 2002; de Bot and Larsen-Freeman 2011).

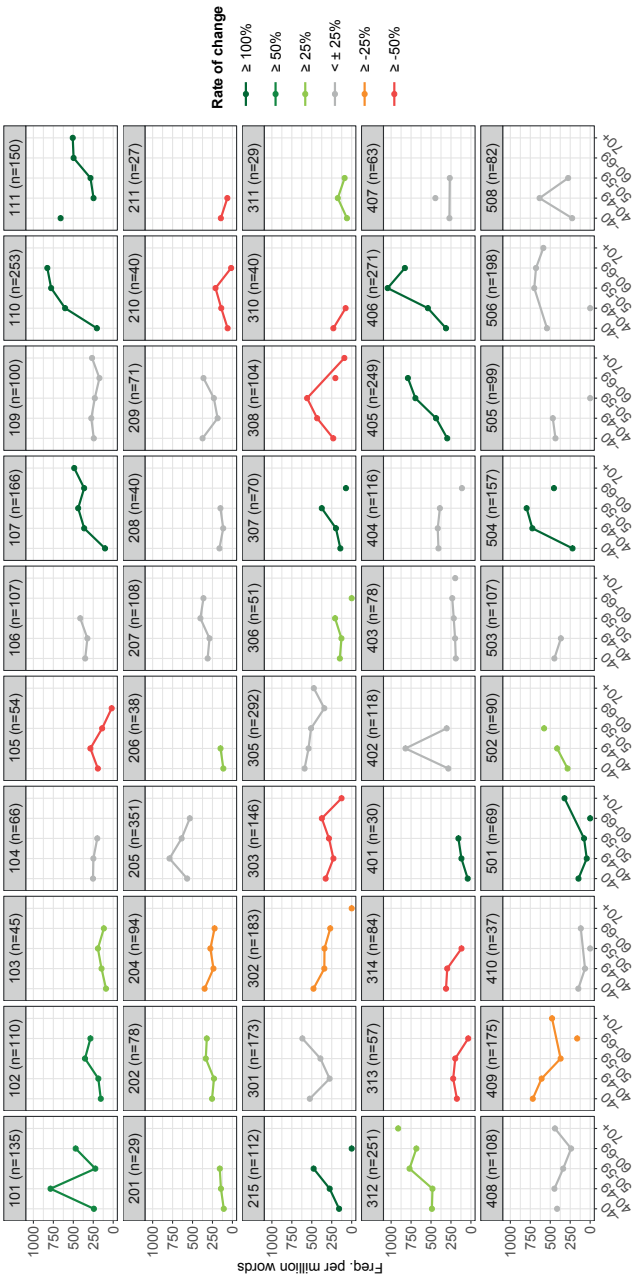

Fig. 6.3: Normalized frequency across the lifespan (reprinted from Anthonissen 2020a: 322, Fig. 4)

than -50%), 10 a moderately strong increase and another 10 an extreme increase (more than +100%). The authors in green (40% of all authors) may be presumed to accommodate to the community change going on at the time. For three authors with a +100% increase (IDs 307, 401, 501) the trend is based on comparatively few tokens; these authors start out with frequencies that are generally lower than the other authors in their generation and catch up during their lives. The remaining 'extreme increasers' (IDs 107, 110, 111, 215, 405, 406, 504) reveal a different pattern, combining high frequency (as compared with other authors in their generation) and a very steep increase. In other words, this group of 7 are among the top adopters of the construction within their respective generations. The findings presented here are vaguely reminiscent of Dąbrowska's (2020) experimental work, which shows that only 10 to 20 percent of speakers need to be sensitive to a particular linguistic rule to sustain statistical regularities at the aggregate level. In a similar vein, only a minority of EM authors show an extreme lifespan increase, yet most of them appear to be at the forefront of the larger community change.

Developments that appear to go against the community trend or show large fluctuations are harder to make sense of. Sometimes, such developments can be explained by scrutinizing important life events such as periods of social isolation or intensive contact with members of another cohort (see, for instance, the case of Margaret Cavendish discussed in Petré et al. 2019). In the present case, biographical information sheds light on the patterns found for Crouch (ID 308), Dryden (ID 210), Fox (ID 204), Whitehead (ID 302) and Penn (ID 314). The apparent lack of structure in Crouch's longitudinal data might be related to his reputation as a "hack writer" (Mayer 1994: 395), whose histories have been described as "a necessary corrective or via media between patchwork antiquarianism and largely plagiarized histories" (Vandrei 2018: 67). Crouch's plagiarism might have skewed the normalized frequencies for some parts of his life, leading to the non-monotonic pattern found in Figure 6.3. While this in itself does not make a particularly strong case, it is likely meaningful given that Crouch's deviant behavior is recurrent across case studies examined as part of the *Mind-Bending Grammars* project (see Section 8.3.1 for details and references to the other case studies).

The second example concerns John Dryden (ID 210), who is notoriously known for his aversion to stranded prepositions. Söderlind (1951: 26) quotes a 1672 essay in which Dryden criticizes Ben Johnson for using end-placed prepositions and admits that he himself "ha[d] but lately observed [this fault] in [his] own writings". Evidence for self-corrections in revised editions can be found as early as 1668 (Yáñez-Bouza 2015: 157–158). This means that by the time Dryden was about 40 years of age, he was well aware of the increased use of preposition stranding. It is quite plausible that Dryden's aversion to stranded prepositions affected his use of the prepositional passive, which would in part explain his low overall

frequency. At the same time, stranding patterns (including prepositional passives) were already conventionalized (and therefore passively entrenched) to such an extent that Dryden did not fully succeed in erasing them from his own language use.

Finally, Fox (ID 204), Whitehead (ID 302) and Penn (ID 314) do not only exhibit comparable aggregated frequencies, but also a similar decline. Rather than being a side-effect of professional practice (Crouch) or normative language awareness (Dryden), these authors' comparable usage patterns might derive from their social identity and concurrent linguistic practice. Fox, Whitehead and Penn are part of a small, close-knit community of nonconformists, the Religious Society of Friends or Quaker movement, which was founded in the mid-seventeenth century by Fox. Their close connections are demonstrated in the EMMA social network plots provided in Chapter 5, where these three authors are clustered both in real life (live social network) and in the citation network. The early Quakers are known for their policy of "linguistic divergence", i.e. their distinctive ways of speaking, which fostered group identity and called into question established norms (Birch 1995: 39). While there is no reason to assume that the Quakers viewed the prepositional passive as socially indexed, their in-sync lifespan development is remarkable all the same. They also show a couple of distinctive lexical preferences in the use of the prepositional passive, most notably *do by* (or *do to/unto*), as in *do as you would be done by*. This collocation features in each Quaker's individual top 10 of frequently used prepositional passives, accounting for 41% of all the instances of the DO BY prepositional passive in EM. Fox and Whitehead are furthermore the only two authors in the corpus who form prepositional passives with the complex phrases *make a prey (up)on* and *turn away from*.

In sum, the findings have shown that both generational and lifespan change are instrumental in the community-wide increase of the prepositional passive. They also illustrate how variation arises from speakers' unique personal histories, and that variation in usage is correlated with change. That is, the strongest growth in frequency occurred in generations with comparatively high interspeaker variability.

6.4 Effects of repeated usage

Now that it has been established that the general increase in the use of the prepositional passive emerges not only from change between but also within generations (i.e. during the lifetimes of some speakers), this section further examines the role of entrenchment and conventionalization processes in constructional change. More specifically, I will focus on frequency effects relating to the interaction between a construction and the lexical items it collocates with. Drawing on Schmid's (2017: 11–

12) survey of entrenchment processes, I will discuss the two major repetition-related determinants involved in the use of the prepositional passive: (a) type repetition (affecting entrenchment and conventionalization of the prepositional passive schema) and (b) token repetition (affecting entrenchment and conventionalization of V-P combinations).

6.4.1 Type repetition

6.4.1.1 Constructional schematization

By the seventeenth century the prepositional passive was well established and occurred with a wide range of V-P collocations. We may thus assume that EMMA authors acquired a variable prepositional passive schema before adulthood, though individual degrees of abstraction and lexical preferences are likely to vary. An important factor, not only for the emergence of this mental schema in language acquisition, but also of its representation and use in adulthood, is type repetition, i.e. repeated use of a variable schema. Type repetition is associated with a number of cognitive and linguistics effects, most notably the (cognitive) strengthening of the variable schema and (linguistic) productivity (cf. Bybee and Beckner 2015; Schmid 2017).

The verbal slot is traditionally regarded as the main determinant of syntactic productivity, which is here understood in terms of a construction's extensibility, i.e. its "ability to attract new or existing lexical items" (Barðdal 2008: 1). At the communal level, the prepositional passive continues to expand to new verb-preposition combinations, as demonstrated by the cumulative type frequency in Figure 6.4.

Each periodical mark in Figure 6.4 represents the sum of previously attested types and types first occurring in that period. Because larger corpus parts provide more opportunity for a higher number of types (yet not in a linear way), the width of the individual periods (marked off by light-grey vertical grid lines) is adjusted so as to represent their proportional size. The difference between two intervals marks the number of new types. The resulting curve as well as the wide range of attested types (542) including 197 hapax legomena verify that the early modern prepositional passive was used productively and still had plenty of potential for expansion.

The seventeenth- and eighteenth-century expansion of the prepositional passive also involves complex verb-preposition combinations, which were uncommon in earlier periods. Complex prepositional passives with nominal elements, such as (14), have sporadically been attested from the fifteenth century onward (see Chapter 4) and are the most commonly attested types in the EMMA corpus, accounting for 89% of all complex prepositional passives.

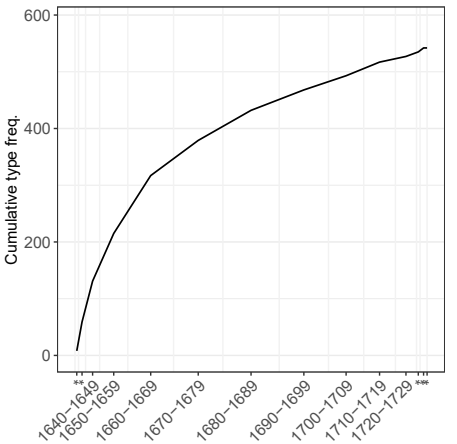

Fig. 6.4: Cumulative type frequency (reprinted from Anthonissen 2020a: 326, Fig. 5)

(14) *And because one dangerous Policy hath been mentioned by you, it will not be amisse to couple it with another device of the Divell, as seasonable and necessary in these times to be* ***taken notice of****.*
(a70084, Thomas Fuller, 1643)

The extension to phrasal-prepositional verbs did not advance prior to the seventeenth century. The earliest safe example listed in Visser's (1973: 2135) work dates from 1662 (*cry out on*); no other pre-1700 occurrences are given (see Section 4.2.2). The first phrasal-prepositional passive in EM (15) appeared slightly earlier than Visser's example (1642), and is also the first attestation of a complex prepositional passive in EM (the second is given in (14)). Instances with phrasal verbs and adjectival phrases of the type *make light of* represent 5% and 6% of complex prepositional passives in EM. Combinations with prepositional phrases are presumably not only less frequent but are also rarely passivized; no more than two examples are attested in EM, each time in coordination with a transitive verb or conventionalized verb-preposition pairing, which underscores the novelty of the expressions. While (16) undoubtedly entails a phrase that is creatively assembled, (17) features a verb-preposition sequence that is already lexicalized or conventionalized to a certain extent. This is evidenced by its entry in the OED, which includes active clauses dating back to at least *c*1450 ("hand, *n.*", OED 2019). The appearance of *go in hand with* in the prepositional passive is nevertheless innovative in itself.

(15) […] *or else why are Presbyters* ***cry'd out against*** *so bitterly in all cases, for non-residence,*
(a64057, Jeremy Taylor, 1642)

(16) *Their thoughts are bad and wicked, and to be repented of, and* ***to be prayed to God for the forgiveness of****, which few are come to in our days, and to do as Simon Magus did.*
(23249622, George Fox, 1663)

(17) *The work which he had discovered to be approaching, was instantly hastned and* ***gone in hand withall****: v. 23.*
(a53716, John Owen, 1649)

It is safe to conclude from the discussion in Chapter 4 and the distribution in EM that the use of complex prepositional passives only starts to gain momentum in the second half of the seventeenth century. It thus appears that, at least at the collective level, the quantitative frequency change discussed in Section 6.3 is accompanied by a qualitative change (expansion to new and more complex types). The extension to complex verb-preposition combinations can furthermore be considered a fairly novel development in the seventeenth century: while the diffusion of the prepositional passive is complete (all authors use the construction and have presumably acquired it before adulthood), the complex prepositional passive has not yet been adopted by all members of the community. Thus, merely one in four EMMA authors passivize phrasal-prepositional sequences and 10% do not produce a single instance of a complex prepositional passive. I will return to the issue of schematization in individuals in Section 6.4.1.2.

The focus thus far has been on the productivity of the verbal slot, several aspects of which are symptomatic of constructional schematization. The findings essentially describe the phenomenon of host-class expansion as it is known from grammaticalization studies, i.e. change at the construction-internal level (cf. Section 3.4.2). There is another way to quantify increasing schematicity based on properties that are not internal to the construction, but have to do with how the construction is dispersed in natural language data. In corpus linguistics, dispersion captures how evenly a particular word or construction is distributed in a corpus. It is well known that grammatical or highly schematic forms tend to occur with regular intervals, while the distribution of lexical elements can be quite bursty (Gries 2008; Hilpert 2017a; Hilpert and Correia Saavedra 2017). Because dispersion or evenness of spread correlates with schematicity, it can be used as a measure of grammaticalization (Petré and Van de Velde 2018; Correia Saavedra 2019). In particular, an increasingly even dispersion might signal that a construction is becoming more schematic since grammaticalizing units spread to a wider range of

contexts and, as a consequence, become more evenly distributed (Hilpert 2017a: 62; Petré and Van de Velde 2018).

The present study uses Gries's (2008, n.d.) normalized deviation of proportions (DP_{norm}) to calculate the dispersion of the prepositional passive in each author's corpus. The computation of DP and DP_{norm} for the word a proceeds according to the formula presented in (18), where n is the length of the corpus in parts, s the percentages of the n corpus part sizes, f the overall frequency of a in the corpus and v the frequencies of a in each corpus part (Gries n.d.).

(18) $$DP = 0.5 \times \sum_{i=1}^{n} \left| \frac{v_i}{f} - s_i \right|$$

$$DP_{norm} = \frac{DP}{1 - min(s)}$$ (Gries n.d.)

DP is obtained by summing up all n pairwise absolute differences of the observed and expected percentages of the word or construction at hand and multiplying the outcome by 0.5; to normalize this value, one has to divide it by the maximum value DP could take on given the corpus in question (Gries 2008, n.d.; Lijffijt and Gries 2012).[7]

While other measures of dispersion exist, I opted for DP_{norm} because it does not require sub parts of the corpus to be identical in size (for a discussion of the advantages and drawbacks of various dispersion measures, see Gries 2008). By computing DP_{norm} for the prepositional passive in each author's corpus, I obtained 50 values that reflect how evenly the prepositional passive is distributed in each author's language use. Per-author corpus parts were defined as follows: each year for which there were data available in an author's career was taken as one corpus part.[8] To compute DP_{norm}, I used the script provided by Gries (n.d.), which is a minor update of the script that came with the 2008 article. This yields a value between 0 and 1, where values close to 0 approximate a perfectly even spread, and values close to 1 a maximally unequal distribution with clusters of concentrated use. Highly grammaticalized forms are characterized by a low DP_{norm} (Gries 2008: 421;

7 As Lijffijt and Gries (2012: 148) point out: "*DP* is maximal when all occurrences of the word of interest are in the smallest part of the corpus. Hence the normalization factor should be [...] one minus the size of the smallest corpus part."

8 When establishing EM, most EMMA documents were either fully included or fully excluded. Some documents were only partly included. To ensure EM remained co-indexed with EMMA, the irrelevant parts of these documents were retained but the words replaced by dummy tokens, e.g. `God smiled` → `DUMMY1 DUMMY2` etc. These dummified tokens are *in* the corpus, but will not be found by querying "`God`" "`smiled`" and they are subtracted from the EM word counts. Documents with dummified tokens were excluded because the dummified spans complicate several steps in the computation of dispersion.

Hilpert 2017a: 62; Petré and Van de Velde 2018: 889). Diachronically, then, the DP_{norm} of grammaticalizing forms is expected to decrease.

Based on this general prediction, we may hypothesize that the prepositional passive's DP_{norm} is higher in earlier-born authors than it is in later-born authors (see Petré and Van de Velde 2018: 889–890 for a similar approach). A linear regression that models DP_{norm} as a function of authors' birth dates shows that there is a negligible overall decrease that is not statistically significant (Appendix, $Model_{DP}$ 1, Table 10.2). However, such a model neglects the importance of group dynamics. As in Figure 6.2, authors were classified according to their prototypical genre: NARRATIVE, RELIGIOUS, and OTHER, where the latter is not a unified category. While genre is principally a linguistic factor, there is considerable overlap with the clusters in these authors' social network, as is evident from the social network figures in Chapter 5. In other words, the primary genre of EMMA authors represents to some extent a social reality, as prototypical genre orientation is related to the people these authors communicated with in real life or in writing, both professionally and privately (see Section 6.5 for a more elaborate discussion on genre and communities of practice). Taking these groups into account, Figure 6.5 plots the values of DP_{norm} for each author predicted by date of birth and grouped by genre; Table 6.3 presents the regression estimates.

The model that includes genre as a predictor performs much better than the simple model with birth date as a single predictor and reaches significance (cf. Table 6.3 and Appendix, Table 10.3). The picture that arises is also more straightforward. The regression lines in narrative and religious authors show a very similar slope, with DP_{norm} decreasing over time. The genre classification does not concern the rate of change; rather, it highlights the difference in average DP_{norm}, which is higher in narrative authors. Once this discrepancy is accounted for, we see that the prepositional passive is more evenly distributed in the writings of later-born authors (across both groups). No clear trends can be discerned in the category OTHER, which represents a mixed bag of authors from specific professional groups (e.g. legal, scientific and historical writings). Because of that, the category OTHER slightly confounds the results in the second model. The model performs better if this group is left out (cf. Appendix, Table 10.4). Overall, the dispersion metrics, which reveal a decrease in DP_{norm} over time, corroborate the claim that the prepositional passive is becoming more schematic in the period under investigation.

A final observation that relates to the productivity of the prepositional passive concerns its use in coordinate patterns. As pointed out in Chapter 4, early attestations of the prepositional passive often occurred in conjunction with passivized transitive verbs, as in (19). Coordinated clauses underscore the similarity between prepositional verbs and regular transitive verbs, which may have facilitated the use of the prepositional passive. Dreschler's (2015: 117–118) data for Middle En-

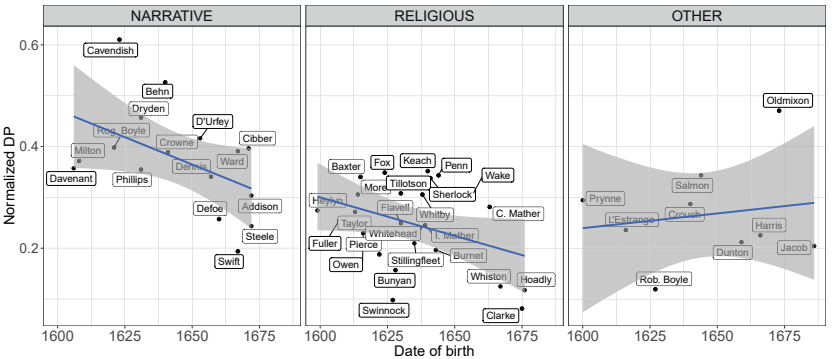

Fig. 6.5: Dispersion of the prepositional passive by author's date of birth and genre

Tab. 6.3: Model_{DP} 2: DP_{NORM} ~ BIRTH DATE + GENRE

	Estimate	SE	*t*-value	*p*-value
(Intercept)	2.310	0.944	2.448	0.018 (*)
birth date	-0.001	0.001	-2.051	0.046 (*)
genre = religious	-0.140	0.029	-4.812	<0.001 (***)
genre = other	-0.109	0.037	-2.922	0.005 (**)
Overall fit	R^2=0.36; Adj. R^2=0.31; p<0.001			

glish show that 17% of the attested prepositional passives are coordinated with a transitive verb. In Modern English, this number is much less pronounced (4%), which could indicate that the prepositional passive has been ingrained to such an extent that conjunction with transitive verbs is no longer needed; the percentage of conjunction in prepositional passives is, however, still somewhat higher than in regular passives (1%) (see Schwarz 2019: 261). Data from the EM corpus are consistent with this apparent decline. The aggregated data show that 14% of the attestations are used in conjunction with transitive verbs (19) and another 2% with other prepositional verbs (20).[9] The percentage of conjunction with transitive verbs is slightly lower than in Middle English, but it is hard to claim that this difference is meaningful because the data set for Middle English is so small (35 examples, see Dreschler 2015: 117–118).

(19) *and what Part thereof hath been **sold** and **disposed of***
(0409100501, Giles Jacob, 1730)

9 Conjunction with other prepositional verbs includes examples where either the verb or the preposition is elided, e.g. *bow to and at* and *cared and provided for* (see Section 6.2.3).

(20) *And because some persons at some time Swear truly and sincerely, therefore the same persons may not be **tamper'd with** and **prevail'd upon** at some other time to be Perjur'd.*
(a47891.4, Roger L'Estrange, 1681)

A more fine-grained picture of the data in EM, which covers most of the seventeenth century and the first half of the eighteenth century, is presented in Figure 6.6.

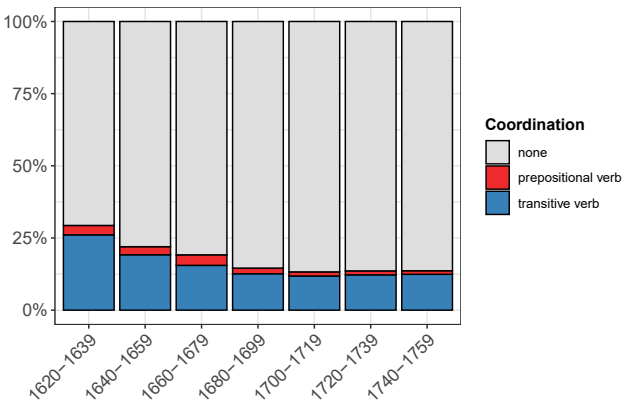

Fig. 6.6: Prepositional passives in coordinate patterns

The longitudinal data support the view that the rate of verb conjunction is generally in decline. As shown in Figure 6.6, the percentage of conjunction with transitive verbs steadily decreased over the course of the seventeenth century, after which it stabilized at approximately 13%. The twentieth-century average of 4% obtained in the corpus study by Schwarz (2019) suggests that a further decrease must have taken place in Late Modern English.

6.4.1.2 Schemas and schematization in individuals

This section discusses the effects of type repetition in the individual. At the cognitive level, type repetition is considered to strengthen the mental representation of the variable schema. Because speakers learn and experience language in similar but distinctive ways, no two speakers have the same grammar, and individual representations of a single construction can vary widely (cf. Dąbrowska 2020). In what follows, I highlight some findings of the corpus study that attest to individual differences in the representation of linguistic knowledge, and consider their relevance for the study of language change. Even if an author's oeuvre may not

reflect the full extent of linguistic knowledge this author has, carefully designed idiolect corpora such as the EMMA corpus lend themselves well to the study of individual variation, and can, as such, offer a window on how linguistic knowledge is cognitively organized (cf. Schmid and Mantlik 2015; De Smet 2016b).

In Section 6.4.1.1 on the aggregate development of the prepositional passive, it was shown that the construction becomes more schematic, exerting fewer constraints on the verb-preposition collocations it accommodates. Passivization of complex verb-preposition sequences extends to various types of multi-word units, where the verb and preposition are interceded by a particle (e.g. *cry out against*), a noun phrase (e.g. *make use of*), an adjectival phrase (e.g. *make light of*) or a prepositional phrase (e.g. *go in hand with*). A closer look at the distribution of these types, however, shows that the aggregate trend towards increasing schematicity is not uniformly manifested in the language of individual speakers, cf. Table 6.4.

Tab. 6.4: Frequency and adoption of construction types

Type	Freq.	Types (n)	Authors (n)	Authors (%)
Simplex	5,213	495	50	100
Complex	488	47	45	90
Nominal	434	31	45	90
Phrasal	24	7	12	24
Adjectival	28	7	7	14
Prepositional	2	2	2	4

While simplex prepositional passives are well established and diffused through the entire EMMA community, complex construction types have not been adopted by all members in the sample. Among the complex types, prepositional passives featuring a verbo-nominal phrase are used most extensively, and by the widest range of speakers (90%). Scoring high on the dimensions of usualization and diffusion, this construction type has reached a fairly advanced degree of conventionalization in the seventeenth and eighteenth centuries. The other complex prepositional passives are rather uncommon by comparison, and used only by a minority of speakers. The strongest drop in diffusion can be observed with V-P combinations that are interceded by a prepositional phrase, examples of which were first given in Section 6.4.1.1 and are repeated here as (21) and (22).

(21) *Their thoughts are bad and wicked, and to be repented of, and* ***to be prayed to God for the forgiveness of****, which few are come to in our days, and to do*

as Simon Magus did.
(23249622, George Fox, 1663)

(22) *The work which he had discovered to be approaching, was instantly hastned and* ***gone in hand withall****: v. 23.*
(a53716, John Owen, 1649)

As hinted at before, these two instances could reflect the outcome of two different cognitive processes. Several pieces of evidence suggest that the main process involved in the passivization of *go in hand withal* is lexicalization or syntagmatic strengthening at the V-P token level (see Section 6.4.2 for a detailed analysis of the effects of token repetition). The lexical entry in the OED is certainly a strong argument in favor of this view, but corroborating evidence comes from the fact that Owen also uses the phrase in the active. This suggests that the sequence is stored and processed as a unit. A similar analysis would not be tenable for the other complex passive, which appears to be constructed on the fly, with little regard for what is conventional or deemed grammatical by contemporary standards. There is nothing in the formal or semantic behavior of the phrase *pray (to God) for the forgiveness of* to suggest that it represents a unit-like sequence. Note also that Fox exhibits the highest percentage of complex prepositional passives (21%), thrice the weighted average of the other EMMA authors (7%). Presumably, then, processes of schematization underlie Fox's comparatively flexible schema, which exerts few constraints on the formal properties of the items it attracts.

The remaining two types of complex prepositional passives show signs of incipient conventionalization: 14–24% of EMMA authors have started passivizing phrasal-prepositional verbs and V-Adj-P sequences. Overall, the constructional expansion to various complex types is not uniformly manifested in the linguistic behavior of EMMA authors. Even though the non-attestation of certain construction types in individual usage does not, by definition, imply the existence of cognitive constraints, the particular way in which these types are distributed across individual speakers at least points to interindividual differences in degrees of schematicity.

Because the authors' mental representations of the prepositional passive are in all probability qualitatively different, the collective generalization or productivity increase in the use of the prepositional passive (Section 6.4.1.1) cannot comfortably be taken to suggest any such development during the lifetimes of individual EMMA authors. Here we touch upon the dynamic nature of schematization, which has not been addressed so far. That is, does constructional schematization at the aggregate level of language reflect cognitive schematization?

A comparison of type-token ratios (TTRs) between individuals and generations is inevitably deceptive because we are dealing with variable corpus sizes and token

frequencies which relate to type frequency in a non-linear way. We can, however, determine whether there is a schematicity/productivity increase during the lifetime by comparing a given author's initial and later usage. This was achieved by sorting each EMMA author's instances chronologically and dividing them into two equal groups to keep token frequency constant: the first half of attested instances are assigned to group A, the second half to B.[10] Next, I computed and compared TTRs for each author's A- and B-instances. The results show that there are no meaningful TTR differences in individuals' lifetimes, that is, authors' later usage of the construction (B instances) is not substantially more varied than their usage in the first half of instances (A instances). Only 4 authors show a TTR difference of more than ±10% (with -12.5% as the max. change), but given these authors' low overall frequency of the construction this difference is negligible too.

In sum, the lifespan stability of TTRs indicates that there is no major qualitative shift in individual usage. This observation is not at odds with constructional schematization and increasing productivity at the community level (see Section 6.4.1.1). In fact, as I will demonstrate below, the collective expansion of the prepositional passive results from variability in individual type repetition (reflecting similar yet slightly different schemas). That is, change is intrinsically connected to individual differences in use.

Three observations about individual-level behavior are relevant to the prepositional passive's increased productivity. First, while TTRs remain fairly stable, the A/B-divide does not always neatly correspond to the authors' career halves. For example, authors with a strong frequency increase across the lifespan produce roughly the same number of different types in A and B, but these types are skewed diachronically in that B represents a much shorter period. Second, speakers do not reach their full range of different V-P combinations in the first half of instances (A); each author's B-part entails types not attested in their A-part. Combined with the communal frequency effect described in Section 6.3, these distributions increase type variability within the speech community across time.

The third and final individual-level phenomenon observed adds to this effect. A closer look at speakers' lexical preferences (their top 10s of most frequently used V-P combinations in the prepositional passive) reveals an interesting pattern. While individuals have common shared types such as *look (up)on*, *speak of*, *agree (up)on* and *make use of*, we can also distill a number of idiosyncratic patterns, i.e. individually entrenched patterns that have not diffused to larger parts of the speech community. Table 6.5 gives an overview of the most distinctive patterns.

10 In authors with an uneven total frequency count, the last token is discarded.

Tab. 6.5: Idiosyncratic lexical preferences in the use of the prepositional passive

ID	Author	V-P combination	Indiv./corpus freq.	%
102	Prynne	bow (un)to	7/10	70
106	Taylor	succeed (un)to	7/7	100
		succeed in	5/5	100
		prescribe (un)to	4/4	100
107	More	glance at	8/11	73
109	Baxter	make light of	11/19	58
110	Owen	believe in	9/14	64
204	Fox	make a prey (up)on	6/8	75
		turn away from	7/8	88
		cry against	6/6	100
205	Boyle	press (up)on	10/14	71
302	Whitehead	deal by	4/5	80
		stand by	4/4	100
307	Keach	tread (up)on	9/14	64
403	Dennis	lie with(al)	4/5	80
406	Mather	tremble at	8/13	62
409	Whiston	allow for	6/8	75
		attest (un)to	6/6	100
505	Clarke	act (up)on	9/13	69
		argue with(al)	5/7	71

Idiosyncratic patterns were defined as those V-P combinations that (i) belong to the V-P combinations that are the most entrenched in an individual author's usage (i.e. they are in the author's top 10 of most frequently used collocations in the prepositional passive, occurring at least 4 times in the individual corpus) and (ii) account for more than 50% of the attestations of that collocation in the whole data set (% of EM total). For example, Taylor exhibits a preference for prepositional passives with *succeed (un)to*, *succeed in* and *prescribe (un)to* that is unique in the EM corpus. The extent to which speakers have clear lexical preferences can also be quite different. This can be gleaned from the individual type frequency distributions in the Appendix (Figure 10.2). Robert Boyle (ID 205) and Gilbert Burnet (ID 312) are both ardent users of the prepositional passive, but Boyle exhibits strong lexical preferences, evidenced by a few high-frequency types, whereas Burnet uses many different low-frequency types.

In addition to the distinctive lexical preferences documented in Table 6.5, there are indications that some authors may also have broader semantic preferences above the level of the lexeme. A few illustrations are given in Table 6.6, where the asterisk or dagger symbols indicate which verbs in authors' individual top 10 types are semantically related.

Tab. 6.6: Semantic clustering at the individual level (top 10 types)

	More (ID 107)	Pierce (ID 202)	Fox (ID 204)
1	make use of	look (up)on*	evil-speak of*
2	take notice of*	deal with(al)	speak of
3	look (up)on*	judge of*	turn away from*
4	allude (un)to*	make use of	cry against*
5	glance at*	speak of*	do (un)to*
6	aim at†	think (up)on*	make a prey (up)on*
7	point at*	approve of*	do by*
8	impose (up)on	assent (un)to*	feed (up)on*
9	attain (un)to†	care for*	inquire into
10	prophesy of	do by	pray for

George Fox (ID 204), for instance, has 7 verbs in his top 10 of most frequently used prepositional passive types that convey a potential negative impact on the passivized subject: *evil-speak of*, *turn away from*, *cry against*, *do (un)to*, *make a prey (up)on*, *do by* and *feed (up)on*.[11] Pierce's (ID 202) top 10 types, by contrast, are linked to notions such as consideration, judgment and approval, e.g. *look (up)on*, *judge of*, *speak of*, *think (up)on*, *approve of*, *assent (un)to* and perhaps also *care for*. In More's (ID 107) use, we find several verbs that have to do with directing someone's attention to something, e.g. *take notice of*, *look (up)on*, *allude (un)to*, *glance at*, *point at*. This sense of direction is also prominent in two goal-oriented verbs: *aim at* and *attain (un)to*. This is not to say that those authors *only* use the prepositional passive for a semantically motivated subset; rather these semantic preferences in authors' most entrenched patterns illustrate once more that aggregate trends may obscure much variability at lower levels, for instance in the particular semantic connotations individuals may come to associate with a pattern, or the paradigmatic associations they make between the lexemes that fill a slot. This type of variation has long been ignored, or deemed irrelevant. However, small individual biases such as the lexical preferences and semantic groupings observed here enrich the type distribution at the aggregate level and increase the likelihood that other speakers will be exposed to atypical prepositional passives. Thus, even if speakers do not significantly 'schematize' their use of a construction over the lifespan, they may still play a role in diachronic constructional schematization to the extent that skewed individual distributions generate variation in the community at large.

11 The verbs *evil-speak of* and *speak of* are obviously also related, but the instantiations of passive *speak of* in Fox's texts do not carry the negative connotations associated with the other starred verbs.

The results in this section attest to the complex interplay of unique and shared knowledge in language use and language change. What all EMMA speakers appear to have learned is a shared prototype of the prepositional passive: a schema with a variable verbal slot that typically accommodates a simplex V-P combination (e.g. *look (up)on*, *speak of*) or a frequent verbo-nominal expression (e.g. *make use of*). The most commonly used lexical items at the aggregate level are also those that have achieved the highest degree of diffusion (i.e. adoption by individual speakers). At the same time, speakers use the construction in varied and at times idiosyncratic ways, and do not invariably sanction the more complex types of multi-word phrases. That is, individual variation is not limited to the rate of usage (cf. Section 6.3), but extends to lexical/semantic and formal constraints, which presumably reflect *qualitative* differences in mental representation. If so, this challenges or at least complicates the variationist premise that while speakers may differ in terms of the overall rate of use of alternating forms, the grammatical constraints on the variable rule are shared by all the members of the speech community (cf. Guy 1980; Meyerhoff and Walker 2007; Labov 2012).

The present case furthermore illustrates how individual variation can effectuate or accelerate linguistic change at the community level. How does that work exactly? When an utterance is produced within the context of an interaction, it stops being private; it materializes and is passed on as input to whoever happens to hear or read it. Because speakers have no direct access to other speakers' cognitive routines (Dąbrowska 2020), usage in social interactions is the cornerstone of their own linguistic knowledge. Variability in the input may influence individuals' representations in two ways: it affects "not only *what* people learn, but also *how well* they learn it", with greater variability leading to more successful learning, e.g. in semantic skill or phonetic perception (Lev-Ari 2016a: 2053, also in reference to studies by Sumner (2011) and Rost and McMurray (2010)). In the period under investigation, the combinatory effect of a frequency increase and idiosyncratic lexical preferences makes that speakers become acquainted with an ever-widening range of types. The actual nature of the mental representation is thereby of lesser importance than the cumulative effect of increasing variability and its knock-on effect on current and new learners. Children first acquiring the construction find themselves in a changed linguistic landscape, where the input is quantitatively and qualitatively different from when earlier generations grew up: the generalizations they arrive at are based on more, and more varied, instances of the construction.

In sum, this section has argued that small individual biases in the way the prepositional passive schema is represented and used sustain and increase the variability of the construction in the speech community, which facilitates its extension to novel expressions and leads to a diachronic shift in its usage profile.

6.4.2 Token repetition

Another factor that is relevant to the prepositional passive is the repetition of specific verb-preposition combinations. At the constructional level, token repetition of prepositional verbs affects the paradigmatic associations of the verbal slot and may lead to preferential selection of specific lexemes by individual authors, a development which was touched upon in the previous section because of its relation to type repetition and variability at the community level. This section examines how token repetition impacts on the syntagmatic associations of individual verb-preposition sequences, and how this relates to their occurrence in the prepositional passive.

The main domain-general cognitive abilities involved in the linear association of strings are chunking and automation; linguistic effects include fusion, the emergence of collocations, loss of compositionality (lexicalization) and tightening of internal syntagmatic bonds (cf. Schmid 2017). This bears directly on the theoretical discussion in Chapter 4 (in particular Section 4.2.4), where it was argued that two factors predict the occurrence of verb-preposition sequences in the prepositional passive: degree of entrenchment (frequency of V-P co-occurrence) and semantics (compatibility with the passive construction). Recall that entrenchment is non-discrete: while many verb-preposition collocations come to be perceived as units, some degree of compositionality may still be preserved and a single V-P combination may have more or less unit-like uses (e.g. *arrive at a solution* vs. *arrive at the station*). Here I take collocation proper (i.e. frequency of co-occurrence) as the basic requirement for the entrenchment of the V-P string and use this as a gradient measure in a quantitative study on the usage intensity of V-P combinations. In particular, this analysis seeks to determine to what extent the frequency with which V and P co-occur in the active (roughly, entrenchment/usualization of a V-P combination) affects their frequency in the prepositional passive. Linear regression is used to describe this relation.

The data set for this supplementary study is limited to the attestations of the prepositional passive in generations 1 and 2, but adds another 27,732 data points representing the active instances of the attested V-P combinations in these two generations (cf. Section 6.2). This provides a large enough data set to examine the question at hand. I will focus on the resulting frequency effect in the speech community, but will relate this to individual patterns of entrenchment.

The following plot gives us a first impression of the relationship between the frequency of V-P combinations that occur in the prepositional passive and their frequency in the active. Each point in the plot represents a V-P combination. Logarithmic scales (log1p) were used for visualization purposes.

The scatter plot indicates two things. First, the higher the frequency of a V-P combination in the prepositional passive, the higher its frequency in the active.

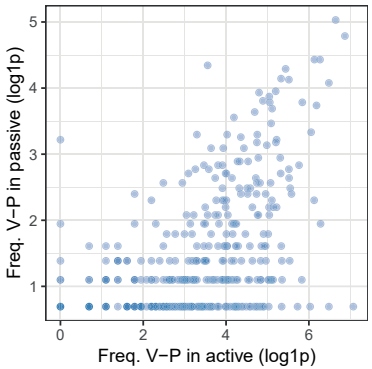

Fig. 6.7: The relationship between the frequency of V-P combinations in the active and the prepositional passive

This would be predicted by the principles of entrenchment: the more a V-P becomes routinized, the easier it will be for speakers to access it as a unit that may be passivized. Second, V-P combinations that are infrequent in the prepositional passive may actually be very common in the active. That is, the relationship between active and passive frequency is likely influenced by other factors, which may explain why the scatter widens as V-P combinations become more frequent in the active. A regression analysis may yield some descriptive insights. In particular, I examine a potential interaction with the degree of diffusion. The ensuing discussion will also highlight the interaction with verb semantics.

The following variables describe aspects of the V-P combination in the corpus sample. Two variables have already been introduced in the preceding paragraphs: (i) the dependent variable is the token frequency of a particular V-P combination in the prepositional passive (aggregated across authors); (ii) the token frequency of that V-P combination in the active (aggregated across authors) is included as an independent variable. They are abbreviated as TOKF_PPP and TOKF_ACT, respectively. Another independent variable was added to the model to account for potential differences in diffusion. Specifically, the variable DIFFUSION represents the adoption rate in the prepositional passive, i.e. the number of authors who use a particular V-P combination in the prepositional passive. DIFFUSION has three levels: NOVEL (only 1 author uses this item in the prepositional passive), EARLY (fewer than half of the authors in the sample use this item) and CONVENTIONALIZED (more than half of the authors in the sample use this item). The linear regression then models the frequency of a given V-P combination in the prepositional passive as a function of its usage intensity in the active and diffusion in the prepositional passive. The results are presented in Figure 6.8 and Table 6.7.

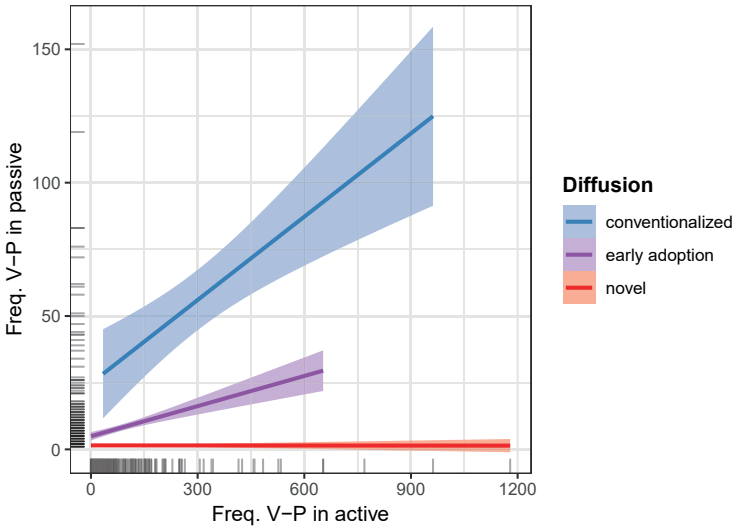

Fig. 6.8: Aggregated data: token frequency of verb-preposition combinations in the prepositional passive as a function of active frequency, grouped by degree of diffusion in the prepositional passive (adapted from Anthonissen 2020a: 330, Fig. 6)

Tab. 6.7: TOKEN FREQ. V-P IN PASSIVE ~ TOKEN FREQ. V-P IN ACTIVE × DIFFUSION

	Estimate	SE	*t*-value	*p*-value
(Intercept)	24.78	2.70	9.19	<0.001 (***)
tokf_act	0.10	0.01	14.64	<0.001 (***)
diffusion = early	-19.87	2.80	-7.10	<0.001 (***)
diffusion = novel	-23.28	2.76	-8.45	<0.001 (***)
tokf_act : diffusion = early	-0.07	0.01	-7.04	<0.001 (***)
tokf_act : diffusion = novel	-0.10	0.01	-11.88	<0.001 (***)
Overall fit	R^2=0.75; Adj. R^2=0.75; p<0.001			

As expected, the most productively used lexical sequences in the prepositional passive are those that score high on the two dimensions of conventionalization in the EC-model: usualization (they are established ways of expressing a particular concept, as evidenced by frequency) and diffusion (many speakers use the collocation in the prepositional passive). At the same time, the plot and regression estimates reveal some structure in the data that was not evident from the scatter plot in Figure 6.7. The results show that the frequency of a V-P combination in the prepositional passive (TOKF_PPP) is correlated with the general frequency with which V and P co-occur (TOKF_ACT), but only if its use in the prepositional passive

has diffused to a critical number of speakers (CONVENTIONALIZED). The positive correlation is significantly weakened in the interaction with EARLY DIFFUSION and disappears when only one author uses the V-P sequence in the passive (NOVEL). In other words, only when a specific type of prepositional passive has diffused in the community, is its frequency correlated with that of the active.

A semantic analysis sheds light on the V-P sequences that most strongly deviate from the general correlation. At one end of the spectrum we find V-P combinations that are unique or only marginally productive in the prepositional passive (frequency ≤ 7), yet have a high overall frequency of co-occurrence (≥ 250): *come (un)to*, *go (un)to*, *enter into*, *walk in*, *fall (up)on*, *depend (up)on*, *stand (up)on*. These are principally verbs of physical activity where the prepositional phrase invokes the thematic role of goal or location rather than patient (see also Hoffmann 2011). It is therefore improbable that they will come to be used productively in the prepositional passive; only in figurative uses with a lower degree of compositionality and stronger resemblance to simplex transitive verbs (e.g. (23)) is their compatibility with the passive construction, and hence their appearance in prepositional passives, more likely.

(23) *Were such an Association* ***entred into****, and bravely supported, Jacobitism would quickly learn to Despair*
(k050367000, Daniel Defoe, 1717)

But even those expressions that come to be used primarily in a metaphorical sense (such as *depend (up)on*) might resist frequent passivization because they tend to relate something about a topical agent, which is most naturally expressed by means of an active construction. Related to this is the finding that active and passive voice constructions have distinctive semantic preferences; verbs distinctive for the active voice tend to encode stative relations, while those in the passive tend to express "actions with a salient and relatively permanent end-state" (Gries and Stefanowitsch 2004: 109).

Conversely, there are a number of V-P sequences which are more frequent in the passive (≥ 7) than would be expected based on their low frequency in the active (≤ 25): *evil-speak of*, *do by*, *connive at*, *conclude (up)on*, *contend about*, *spit (up)on*, *glance at*, *succeed (un)to*, *turn away from*. This group is more mixed. One set of expressions (*do by*, *glance at*, *succeed (un)to*, *turn away from*) was previously singled out as being idiosyncratic (see Table 6.5) or distinctive of a particular group of speakers (i.e. the Quakers, see Section 6.3). These speakers are likely to have routinized lower-level constructions of the passivized V-P sequence, as evidenced by, for instance, the frequent use of longer strings such as *do as you would be done by* and *is/are to be turned away from*. The other group of verbs seems to

be particularly compatible with the functional traits of the passive construction. In expressions conveying a negative evaluation (*evil-speak of*, *spit (up)on*, *turn away from*), the passive subject is emotionally affected and therefore expresses a relation that is prototypically associated with the passive construction (cf. Quirk et al. (1985: 1164–1165) on affectedness and Gries and Stefanowitsch (2004) on the different collostructional profiles of actives and passives). Other V-P sequences are less clearly associated with affectedness (*connive at*, *contend about*, *conclude (up)on*), but also characterize a state of affairs in which the object might be more salient than the agent and hence competes for topicality.

Aggregated token frequencies are by no means a one-to-one fit with individual entrenchment (strength of cognitive associations), but they do show which V-P combinations are likely to become entrenched in individuals because usage in the speech community increases the likelihood of activation and association in individual minds (see Chapter 2, Section 2.4.1). We may attempt to discern true entrenchment effects by counting V-P frequencies per individual; a data point does then no longer represent the general frequencies of a particular V-P combination, but each individual's frequencies of that item. Such a linear model has a considerably lesser fit ($R^2 = 0.38$, $p < 0.001$), but replicates the interaction effects between TOKF_ACT and ADOPTION (as illustrated in Figure 6.9). The only difference is that the correlation in active and passive usage intensity in NOVEL is not completely annulled as was the case in the aggregate model. That is, in the model with individual-level V-P frequencies, active frequency still has a slight effect in NOVEL V-P combinations. This is because some authors show a moderate correlation between their use of a NOVEL V-P in the prepositional passive and their general usage frequency of that collocation in the active (e.g. Boyle (ID 205), $r = 0.33$, $p = 0.16$ (ns); cf. the slope for NOVEL slightly goes up), while in most authors it is weak (e.g. Owen (ID 110), $r = 0.10$, $p = 0.68$ (ns)), see Figure 6.9.

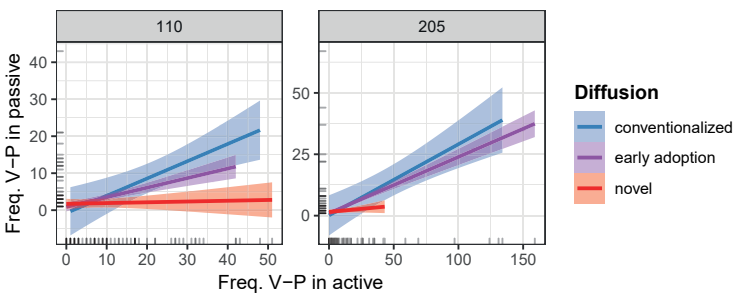

Fig. 6.9: Individual-level data: token frequency of verb-preposition combinations in the prepositional passive as a function of active frequency, grouped by degree of diffusion

However, even for the two authors with the most robust data (Figure 6.9) there are too few individual-level data points in the category NOVEL (i.e. V-P combinations that only the authors in question use) to make any generalizations about this issue. Some qualitative pointers in Boyle's material suggest that both lexicalization as a result of token repetition (24) and the application of the prepositional passive schema to a compositional pattern (25) can result in NOVEL uses.

(24) *And from hence we may collect, that the Analysis, wont to [b]e* ***acquiesced in*** *by vulgar Chymists; is as yet, but an indetermined thing*
(11704469, Robert Boyle, 1682)

(25) *Which [s]ituation and the Neighbourhood of the vast Indian Ocean* […] *makes the place where the Pearls are* ***fished for****, exceeding likely to be subject to very troubled Seas*
(9498676, Robert Boyle, 1671)

Boyle uses *acquiesce in* 8 times in the prepositional passive and 26 times in the active, suggesting a strong pattern of association. *Fish for*, by contrast, is unique in the prepositional passive and is not found in his active clauses.

Overall, the results in this section demonstrate the complex interaction between entrenchment, conventionalization and semantics. Token repetition drives both the entrenchment and conventionalization cycle, but whether a specific V-P sequence will come to be used productively in the passive is ultimately determined by its match with the construction's semantics.

6.5 Effects of the social landscape

Sections 6.3 and 6.4 have documented the rise of the prepositional passive and have demonstrated how repeated usage impacts on cognitive structure and leads to long-term linguistic change. While the focus thus far has been on providing a cognitively informed explanation of linguistic change, it is emphasized in our usage-based understanding of language (see Chapter 2) that these aspects cannot be isolated from the social exigencies of speech communities. The present section inquires in more detail how linguistic behavior is influenced by, and predictive of, membership of a community of practice and social network proximity.

Some preliminary remarks are in place. With its focus on interconnected authors of the seventeenth-century London-based elite, the EMMA corpus achieves a certain degree of homogeneity in the social backgrounds of its authors that minimizes the effects of sociolinguistic stratification in terms of region, class, education and gender. However, as elaborated in Chapter 5, there are a number of social

outliers, and several smaller communities of practice can be discerned within the larger community of London-based authors. The social network plots map out these between-author connections in a detailed fashion, drawing on information that was collected from biographies and the writings themselves (mentions of other authors in the selection). The result of this endeavor is a fine-grained but complex picture of social dynamics, which may exhibit equally nuanced relations to the observed linguistic variation.

In what follows, I scrutinize the nature of this interaction by asking two questions: (a) Do authors' usage profiles of a construction cluster into patterns that map onto socially definable groups (communities of practice)? (b) If so, does the extent of usage similarity between authors correlate with their proximity in the social network? Section 6.5.1 examines the categorical effect of group membership (a); Section 6.5.2 zooms in on the correlation strength of social and linguistic distance metrics (b).

6.5.1 Clustering usage profiles

Ever since Labov's (1966) seminal work put the social stratification of linguistic variation on the research agenda, linguists have been exploring the myriad ways in which language and social membership intersect. A central concept in more recent work is that of the 'community of practice', a term coined by Lave and Wenger (1991) to highlight the social nature of learning (called 'situated learning'). The notion also proved useful for sociolinguistics because it trades the rigid view of a "community defined by a location or by a population" for a more dynamic and nuanced one, which focuses on people's mutual engagement in a shared activity (Eckert and McConnell-Ginet 1992: 95). By engaging to a greater or lesser degree in a range of communities of practice, individuals position themselves in the social landscape and develop a social identity (Eckert 2005: 17). This new perspective on communities, central to third wave sociolinguistics, furthermore holds that stylistic practice—the linguistic choices speakers make—is not simply a reflection of social distinctions, but an integral part of how individuals construct a social identity, be it consciously or unconsciously. As Eckert (2005: 21–22) puts it, "linguistic choices rarely index social categories directly; rather, they index attitudes, stances, activities that are in turn associated with categories of people". The reappraisal of style as a potential index of social experience and identity is relevant to the question at hand: Do authors' usage profiles of a construction cluster into patterns that map onto socially definable groups (communities of practice)?

Some findings presented in Sections 6.3 and 6.4 suggest that this might indeed be the case. At various points in the analysis, variation in usage was shown to

be linked to the authors' main community of practice, where a broad distinction was made between NARRATIVE and RELIGIOUS authors and a third category OTHER representing a mixed bag of authors that do not fit these two communities (e.g. legal writers, scientists). One could argue that this classification is purely genre-based, and has little to do with social identity. The distinction is based on primary genre orientation, but in EMMA authors this largely coincides with the authors' professions (e.g. religious leaders, playwrights and novelists). In any case, it can be argued that practitioners of a particular genre or set of related genres make good candidates for forming a community of practice. In the field of corpus linguistics, the notion of genre refers to the classification of texts that are conventionally recognized as serving a similar purpose and sharing particular lexico-grammatical patterns and text-structuring features. While the focus often lies on how genre influences the patterning of linguistic variables, it is important to realize that genre knowledge, which resides in the individual, entails both "procedural and social knowledge", that is, it is best understood as "a form of situated cognition" (Berkenkotter and Huckin 1995: 13; see also Lave and Wenger's (1991) definition of a community of practice in the context of situated learning). This view is corroborated by recent experimental work, which shows that exposure to register (as a function of professional activity or experience) impacts the speed with which speakers process collocations typical of that register (Verhagen et al. 2018). That is, speakers appear to internalize the linguistic conventions of their communities of practice. In conclusion, by engaging in a common endeavor that is associated with particular stylistic practices, the practitioners of a genre can very reasonably be viewed as a community of practice.

Assuming social experience impacts cognition and usage, is it possible to derive communities of practice from speakers' usage patterns, in this case the use of the prepositional passive? This question is addressed by means of a clustering analysis. The first step of the analysis was the development of a usage profile for each author that is composed of a set of variables relating to this person's use of the prepositional passive (frequency, distinct types, distinct complex types, hapax legomena, dispersion). The variables were standardized to account for differences in scale. The resulting usage profiles are supposed to give a general picture of the degree of intensity, creativity and productivity with which authors use the construction, and serve as input for the clustering analysis.

Clustering analysis is a form of unsupervised learning, the goal of which is to identify groups in the data without the help of predefined labels or outcomes. Based on the foregoing, we can hypothesize that the observations on constructional usage will fall into at least two natural clusters reflecting the generic distinction between RELIGIOUS and NARRATIVE authors. But this distinction is a theoretical construct; more fine-grained clusters are conceivable and the patterning of the rest category

OTHER is less predictable. Or it might be the case that the natural clustering of constructional usage does not map onto these social groups at all. Because the algorithm tries to detect structure in the data without being told what to look for, many other clustering patterns are possible. For instance, the algorithm might identify different age cohorts if authors from the same generation have similar profiles; this is not far-fetched given the diachronic changes that were uncovered in Sections 6.3 and 6.4.

To gain insight into these and related issues, I used a non-hierarchical clustering method, *K*-medoids, which partitions the data into *K* groups. The PAM (Partitioning Around Medoids) algorithm that is used for this task clusters observations around cluster medoids. A medoid represents the most centrally located data point in the cluster, whose average distance to other members in the cluster (sum of pairwise dissimilarities) is minimal. Because it uses medoids rather than centroids (means), *K*-medoids clustering is considered to be more robust and less susceptible to outliers than *K*-means (Jin and Han 2017; Schubert and Rousseeuw 2019). While the algorithm does not split the data into predefined classes, one does need to decide on the number of clusters (*K*) beforehand. The optimal number of clusters in the data was determined by means of the gap statistic, which takes the output of a clustering algorithm (in this case the PAM algorithm) and compares changes in within-cluster dispersion (Tibshirani et al. 2001). Applied to the present data set, the gap statistic estimates that there are two well-separated clusters. The results of implementing *K*-medoids with $K = 2$ are visualized in Figure 6.10.

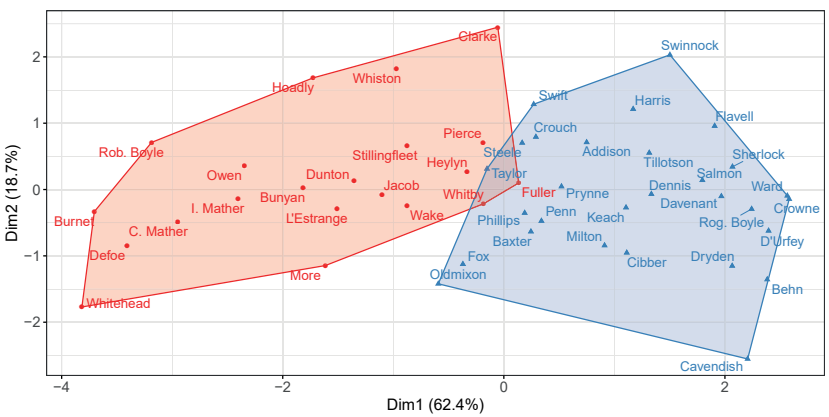

Fig. 6.10: *K*-medoids clustering

The clustering procedure segregates the usage profiles into two groups. Overall, this bottom-up approach appears to be fairly successful in detecting the two communities of practice defined *a priori* (RELIGIOUS vs. NARRATIVE authors). 16 out of 25 RELIGIOUS authors (64%) are assigned to the left-hand cluster (henceforth 'cluster 1') and all but one of 15 NARRATIVE authors (94%) are found in the right-hand cluster (henceforth 'cluster 2'). It also indicates that the community of practice of NARRATIVE authors is more densely structured and sustains more strongly aligned linguistic practices.

The input matrix that was used to establish the usage profile essentially generalizes over a number of variables relating to frequency, creativity and productivity; inspecting the outcome, one can read Figure 6.10 from left to right as representing more progressive to more conservative users of the prepositional passive. This sheds some light on those authors that cluster with authors not belonging to their predetermined main community of practice (NARRATIVE vs. RELIGIOUS). Daniel Defoe, the only narrative author *not* assigned to cluster 2, is clearly an outlier in that his use of the prepositional passive is much more progressive than that of other narrative authors (and most other authors for that matter). As regards the nine religious leaders assigned to cluster 2 (Taylor, Baxter, Swinnock, Flavell, Tillotson, Fox, Sherlock, Keach, Penn), it is noticeable that they all belong to the first three generations of writers. Recall from Section 6.3 and 6.4 that the main leap in frequency of the prepositional passive occurred between generations 3 and 4 and that new and more complex prepositional passives continue to enter the language. Across the board, then, speakers from earlier-born generations are more likely to have more conservative usage values, which could explain the positioning of the nine deviating religious authors. Still, the fact that the unsupervised partitioning of usage profiles yields a set of clusters that aligns quite well with the predefined communities of practice, rather than say five clusters reflecting the five different age cohorts, is telling: it underscores the importance of social experience across generational boundaries.

The clustering analysis did not yield the predefined rest category OTHER as a separate cluster. This is also much in line with the expectations given that these authors do not form a community of practice. Five out of nine OTHER authors (56%) are assigned to cluster 2; the remaining four (44%) to cluster 1. While these authors are connected to other authors in the selection, their involvement might be stronger in other communities of practice that are not well represented in EMMA.

Usage-based and sociolinguistic theory predicts that usage is impacted by social experience. Turning this idea around, I asked whether it is possible to perform bottom-up clustering on usage profiles to detect socially definable groups. The results show that there was considerable overlap between the clustering of usage profiles and those authors' membership of a community of practice, even

on the basis of a single linguistic feature (the prepositional passive). Crucially, the unsupervised learning algorithm did not identify groups that reflect abstract sociological factors such as age, but instead singled out the two main communities of practice. As such, the findings in this section support the recent turn in sociolinguistics, which holds that the linguistic choices speakers make (their stylistic practice) are key to the process of social construction (cf. Eckert 2005).

6.5.2 Correlating usage and social network proximity

Given the general connection between usage (dis)similarity and social groupings found by means of the clustering analysis, the question arises whether we can define this relation in more detail. Rather than grouping authors in a bottom-up way, the goal in this section is to explore the personal, i.e. pairwise, connections in the network by probing whether the degree to which two speakers converge in linguistic usage varies as a function of their proximity in the social network.

The data for this study comprise metrics for all unique author pairs in the EMMA network, e.g. Milton ↔ Dryden, Dryden ↔ Behn, Milton ↔ Cavendish, and so on. With a network size of 50 authors, there are 1,225 potential author links, which are coded for linguistic distance (LINGDIST) and social proximity (CONNECTIVITY INDEX). The dependent variable LINGDIST is defined as two authors' (dis)similarity in their usage profile of the prepositional passive, values of which were obtained from the underlying dissimilarity matrix generated during *K*-medoids clustering (cf. Section 6.5.1). The independent variable CONNECTIVITY INDEX quantifies the social network proximity of author pairs, building on the data set that served as the input to the social network graphs presented in Chapter 5. Some transformations were necessary to arrive at the connectivity index. The edges (author links) in the live and citation networks represent directed or one-way relationships (e.g. Milton → Dryden, Dryden → Milton), yet the design of this study requires two-way relationships between all potential connections in the network. Directed links were therefore turned into undirected links by adding up the weights of the two directed links per author pair. To approximate the connection strength of each link, the weights of the undirected edges in the live and citation network were summed. One could of course keep the live and citation network separate, but in view of the small number of actual links (94 in the live network; 383 in the citation network) compared to the number of potential links (1,225), it does not seem unreasonable to be maximally inclusive when it comes to information that reflects social connectivity. This goes some way toward addressing the zero-inflated independent variable; the addition of the integration score, discussed below, is a second strategy to add some gradation in the lower bounds. Adding up the weights

results in 398 attested links (connection strength > 0) and 827 unattested links (connection strength = 0). Connection strength thus captures the existence and strength of first-order links between two individuals. Another aspect of social proximity is rendered by what I will call 'integration score', which represents the extent to which two authors are isolated from or integrated in each others' personal networks. Social network distance is arguably smaller if two individuals have many shared connections, even though they might not be directly connected. The integration score, then, is the number of shared connections between two authors in the sample. The value that is obtained by adding up connection strength and integration score represents the CONNECTIVITY INDEX. It should be viewed as an approximation of social proximity (see Chapter 5 for a discussion of some of the limitations of the database).

The scatter plot below visualizes the relation between linguistic distance and social proximity. Each point situates a unique author pair along these two dimensions. The color code elaborates one aspect of the connectivity index: blue dots represent author pairs with a first-order link, i.e. authors who are directly connected to each other; red dots indicate the absence of a first-order connection (i.e. connection strength equals 0). The regression lines illustrate the general tendencies, but, as I will show below, should be interpreted with care.

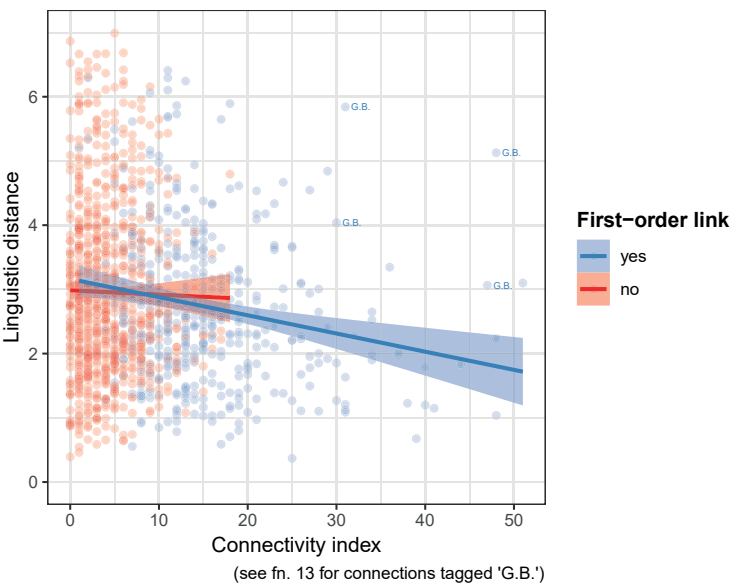

Fig. 6.11: The relation between linguistic distance and social proximity

In an exploratory analysis, the linear model that was fitted on these data (LINGDIST ~ CONNECTIVITY + 1ST_ORDER) reached significance ($p < 0.001$) and revealed a significant effect of CONNECTIVITY ($\beta = -0.02$, $t = -3.37$, $p < 0.001$), and no effect of first-order link ($\beta = 0.02$, $t = 0.19$, $p = 0.85$). The overall fit, however, was very poor ($R^2 = 0.02$, Adj. $R^2 = 0.01$), meaning that the explanatory variables do not explain the variance in the dependent variable very well.[12] This is also evident from Figure 6.11. The data are scattered in a cone-like shape, with high variability of the dependent variable in the lower connectivity bounds, and narrowing scatter as the connectivity index increases. This type of non-constant variance is known as heteroscedasticity, and is problematic for regression modeling because its predictions are not consistent across the values of the independent variable (Khaled et al. 2019: 1194). The presence of heteroscedasticity in the data is confirmed by the Breusch-Pagan test ($p < 0.05$).

Even though the model has no predictive power, this exercise nevertheless yields some valuable insights. Figure 6.11 indicates that low connectivity is a poor predictor of linguistic usage. That is, if two authors are not or only weakly connected to each other, one cannot confidently anticipate how different their linguistic usage profiles are going to be. The range of variation is simply too large. A high connectivity index, on the other hand, is more closely associated with small linguistic distance.[13] The effect is tentative, but in line with the idea that "long and close interaction can produce linguistic convergence" (Labov and Harris 1986: 21).[14] There are various ways in people come to develop such relations, and the social network clearly only shows part of the picture. Combined with the results presented Section 6.5.1, it appears that the social factor most closely associated with linguistic behavior is not distance in the social network per se, but membership of a commu-

12 This is not an unexpected finding with network data, as Dodsworth (2019: 16) notes in a recent study on the relationship between linguistic structure and network proximity: "These models' R^2 values are very low, as expected, because we are dealing with dyadic data. Our goal is to determine whether the factors in the model significantly predict linguistic similarity, rather than to account for all the variance in the linguistic data".

13 Note that in Figure 6.11 four points in the high connectivity bounds (connectivity index ≥ 30) with a linguistic distance of more than 3 represent connections with Gilbert Burnet (tagged 'G.B.' in the plot), who is one of the authors with the most distinct linguistic profile in Figure 6.10 and quite far removed from most authors in the selection. A possible explanation is that Burnet is from Scotland, where he spent much of his early life before moving to London and later still to Salisbury (Greig 2013).

14 See also recent work by Parkinson et al. (2018: 7), who found that neural responses to naturalistic stimuli (video clips) were "exceptionally similar among friends", and significantly less so among subjects that were farther removed from each other in the social network.

nity of practice, which represents a social unit that nourishes the development of long and close relations.[15]

6.6 Conclusion

A logical consequence of viewing language as a complex adaptive system is the recognition that language is both a cognitive and social phenomenon. Recent years have seen a growing interest in this interdependence, but empirical work remains sparse. By homing in on the interaction between individuality and commonality, the studies in this chapter have connected two dimensions intrinsic to language use and change that are not usually studied in tandem, but are necessary to gain a fuller understanding of language change. To investigate the role of individuals in

15 One may wonder how the analysis of social connectivity, which only revealed a weak correlation between linguistic usage and proximity in the social network, can be reconciled with the result of the cluster analysis, where the influence of social structure on linguistic practice seemed more prominent and in line with sociolinguistic research that views social connectivity as a major force in language. The two sets of results are not incompatible. In fact, there are a few factors which explain this apparent discrepancy.
First, it is fair to say that developing a connectivity index – an index of social distance – is much more complex and delicate than defining two communities of practice based on the authors' professions. For reasons laid out earlier, the present index can only be regarded as a coarse measure or indication of social proximity. It is certainly possible to conceive of a more exhaustive approach, for instance by adding information of private unpublished correspondence or larger, more detailed biographies, but this was well beyond the scope of the current project. Yet, despite the limitations on the data used for the connectivity study, there is a tentative result that is in line with the idea that strong connectivity influences linguistic behavior. The effect of connectivity reaches statistical significance, but the overall fit is very poor. This can be largely attributed to the wide range of variation in the lower connectivity bounds. At the same time, authors with a high connectivity index generally do have a small linguistic distance, a good example being Addison and Steele, whose long-life friendship is a textbook example of strong connectivity and who obtained a low value in linguistic distance. Overall, the results are in line with the general finding that trends are clearer at higher levels of abstraction (such as a community of practice), whereas in individual behavior a great deal of variation will be left unexplained. Finally, it should be pointed out that while we know from sociolinguistic research that social connectivity is a major influence on language, the features that are studied in such contexts are usually variables that are socially indexed and represent a choice between two options. This work presents a more fine-grained approach (determining the usage profile of a single construction based on several quantitative measures), and studies a construction that is *not* socially indexed. It is therefore not surprising that differences are more pronounced at the level of the community of practice than at the level of personal connectivity, where the effect is nevertheless observable, but in a much more tentative fashion.

long-term linguistic change, the present chapter has focused on the development of the prepositional passive in the late Early Modern English period. Individual- and community-level aspects of the rise of the prepositional passive were studied on the basis of naturalistic data, which comprise the writings of 50 interconnected authors. The results were organized into three sections, discussing the locus of change (inter- and/or intragenerational change) (i), the cognitive and linguistic effects of repeated usage (ii) and effects of the social landscape (iii).

The first part of the analysis (Section 6.3) documented the community-wide increase in the use of the prepositional passive and showed that both generational and lifespan change contribute to this macro-level change. By scrutinizing individual behavior in real time, this study aimed to advance our understanding of the extent and nature of individual variation, and the possibility of lifespan change. The findings, which report substantial heterogeneity in a speaker-based comparison, make it abundantly clear that collective trends say little about individual cognition. Some aspects of individuals' behavior can be explained by means of biographical insights, other aspects by studying group dynamics (e.g. age cohort, community of practice). As such, the results illustrate how variation and systematicity arise from speakers' unique and shared experiences. Variation and change were shown to be correlated: the strongest growth in frequency occurred in generations with comparatively high interspeaker variability. The longitudinal data add to a growing body of research which indicates that constructional change is not strictly limited to first language acquisition (see Section 2.4.2 for a survey): twenty out of fifty authors showed a considerable lifespan increase in line with the communal trend. Ten of those (i.e. 20% of the community) exhibited an extreme increase of more than +100%. Interestingly, most of these authors were among the top adopters of the construction within their respective generations and were considered the leaders of the larger community change. Whether this particular correlation constitutes more than a coincidence would be an interesting topic for further research.

The second part of the analysis (Section 6.4) investigated in more detail the cognitive and linguistic effects of repeated usage, in particular type and token repetition. Type repetition relates to linguistic productivity and the cognitive process of schematization. At the collective level, the prepositional passive was shown to be highly productive. An examination of speakers' type distributions did not yield clear indications of a qualitative lifespan change, yet did suggest that speakers may have qualitatively different representations of the prepositional passive schema (in terms of lexical preferences as well as degree of schematicity). These individual differences promote variability, and hence productivity, of the construction at the aggregate level of language, thereby challenging the widespread idea that individuality in language is trivial. A supplementary data set was used to examine the effect

of token repetition of verb-preposition strings on their usage frequency in the prepositional passive. The positive effect of frequency of co-occurrence was confirmed, though the relation was shown to be somewhat more complex. Community-related aspects (degree of diffusion in the speech community) and construction-specific aspects (compatibility with the passive's semantics) co-determine whether a specific verb-preposition sequence is used productively in the prepositional passive.

While social mechanisms are closely intertwined with the frequency and cognitive effects discussed in Sections 6.3 and 6.4 and are accordingly commented on along the way, Section 6.5 was dedicated to a more in-depth discussion of the social landscape. The first part presented the results of an unsupervised learning task, which clustered EMMA authors on the basis of their linguistic usage profile of the prepositional passive. The clustering analysis yielded two clusters that showed considerable overlap with the two communities of practice that were defined *a priori*, revealing a general link between usage (dis)similarity and social membership. The second study focused on personal links rather than clusters and probed whether linguistic convergence between two speakers is related to their proximity in the social network. In general, a high connectivity index was tentatively associated with a smaller linguistic distance. Further research will be necessary to clarify this relation since the model performed poorly and therefore does not support any general conclusions on the matter. On the whole, the social factor that appears to have the greatest impact on linguistic usage is membership of a community of practice.

In brief, this chapter has addressed the methodological gap between collective change and entrenchment, that is, the gap between language as a social phenomenon and the cognitive processes responsible for the continuous reorganization of linguistic knowledge in individual speakers. It has documented the manifold ways in which individuality in language reveals itself, and, more importantly, has shown that this variation is not trivial, but can and often does play a meaningful role in advancing ongoing changes as small shifts in frequency and productivity can increase in magnitude over time, leading to what is eventually recognized as language change.

7 The nominative and infinitive

7.1 Introduction

This chapter investigates change in individuals and seeks to clarify whether constructional change of syntactic constructions is possible within the adult lifespan of an individual, thus addressing one of the major research questions presented in Chapter 1. The expanding use of the nominative and infinitive (*Nominativus cum Infinitivo* or 'NCI') in Early Modern English serves as a case study. The studies in this chapter zoom in on diachronic changes in the NCI's constructional semantics during this period and contrast early modern writers' individual trajectories in the use of the nominative and infinitive.

As documented in Chapter 4, the NCI emerged in Late Middle English, but only really caught on in Early Modern English. Key to the NCI's burst in frequency during this period were information-structural demands that arose in the aftermath of the loss of V2. Gradually evolving into a strict SVO language, English lost its versatile clause-initial position which served to establish a connection with the preceding discourse and could host given discourse referents in various constituent forms (subjects, objects, adverbials). With only subjects remaining as unmarked discourse linkers, a need emerged for strategies that could turn non-agentive discourse referents into subject-topics. The passive, which promotes given patients to topic position, is such an "information-rearranging device" (Seoane 2000: 24). Unsurprisingly, its use increased in the early modern period and so did that of the NCI, which inherited the passive's discourse-structuring potential.

While this is an important factor in explaining why the NCI in many cases is favored over its active counterpart (ACI), the information-structuring function of the NCI can only partly explain the skewed distribution of NCIs and ACIs today. Recall from Chapter 4 that the NCI accounts for ca. 70–74% of the total of ACI/NCI instances in Present-Day English, which not only is much more than the early modern percentage (ca. 43%), but also a substantial deviation from the general ratio of active and passive sentences: corpus studies have verified that in Present-Day English ca. 11% of all clauses are in the passive voice.[1] Surely, the information-structural function, which is shared among passives of all types, cannot be the only factor to give rise to such a pronounced contrast. Note, for instance, that if

1 See Mair (1990) and Noël (1998, 2001) for counts on ACIs and NCIs in Present-Day English, Dreschler (2015: 370) for ACIs and NCIs in Early Modern English (43% is the weighted average across the three early modern subperiods she mentions), and Francis and Kučera (1982: 554) for proportions of regular actives and passives in Present-Day English.

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we compare the verb-preposition combinations found in the prepositional passive with their active uses, the prepositional passives account for 9% of all instances in the present study (see Chapter 6, Table 6.2), a figure that is much more in line with the general distribution of actives and passives mentioned earlier. The additional factor that must be at play presumably pertains to the NCI's specialized semantics, which has not featured prominently in the historical accounts, except in the work of Noël (most notably, Noël 2001, 2008; Noël and Colleman 2009, 2010).

Much of the theoretical discussion in these papers revolves around the use of the NCI as a marker of evidentiality, i.e. as a linguistic means to encode the source of information for a particular statement.[2] Noël (2008) conjectures that the NCI's increase in certain Late Modern English genres is due to an increase in evidential uses, but no quantitative study has been undertaken to corroborate this claim. This hypothesis is worth investigating, as it complements the picture established by Los (2009) and others about the loss of V2, and would imply that around the time the NCI had already significantly expanded as a result of the increased need for subject-topics, speakers started to exploit the NCI's potential as an evidential strategy, which in turn may have given the NCI additional impetus and could have led to an overall functional shift.

After presenting the data set and annotation procedure (Section 7.2), I comment on and expand Noël's (2008) semantic classification of the NCI (Section 7.3), which will serve as a basis for the quantitative studies that are discussed in the remainder of this chapter. As this study provides the first quantitative account of the NCI's semantic-pragmatic usage types, the findings may also advance their theoretical delineation. As it will turn out, a shift in function did occur, which is possibly related to the semantics of the passivized matrix verb. Possible correlations between function and verb semantics are presented in Section 7.4. Specifically, I conduct a correspondence analysis to examine how the NCI's semantics interact with the instantiated matrix verbs, thus supplementing the theoretical discussion in Section 7.3. Next, I evaluate Noël's (2008) hypothesis by investigating the NCI's semantic development, focusing in particular on the lifespan trajectories of individual speakers. The main purpose of the diachronic investigation is to verify whether constructional change is attested during the lifetimes of individual speakers and in what ways such changes may manifest themselves. In particular, I

2 Note that the English NCI does not qualify as an evidential proper in Aikhenvald's (2004) terminology (i.e. as an obligatory grammatical category), but rather is an evidential strategy (see also Mushin (2013) for a comparison of obligatory vs. non-obligatory evidentiality). The use of 'evidential' and 'evidential marker' will be used as a shorthand for evidential strategy. Importantly, evidential strategies "express the same range of evidential meanings as those found in grammatical systems" of evidentiality (Mushin 2013: 633).

will look at variation and change in general frequencies and in the distribution of semantic-pragmatic usage types across different stages in adult life.

7.2 Data and methodology

7.2.1 EMMA sample

The analyses in this chapter are based on a sample of the EMMA corpus that retains a strong focus on the individual and the lifespan. While Chapter 6 has shed some light on issues of lifespan change, its major aim was to gain insight into the dynamic interplay between micro- and macro-systems, and the text-based sample that was created for these studies reflects this: the sampling concerns the number of texts rather than the number of authors. The present chapter homes in on how individuals employ NCI patterns to report events or describe states of affairs, thereby shifting the focus to semantic change. To investigate the possibility of such a complex change within the span of an individual's life, it is imperative that the written records are retained in their entirety. Accordingly, the data were sampled in an author-based rather than text-based manner, which means that all available material was retained for a selection of authors so as to be able to track change across the smallest career intervals measurable. In particular, the present studies are based on a selection of 30 of the 50 authors, comprising 6 authors per generation (see Section 5.4 for details). These include 12 religious authors, 12 narrative authors and 6 authors belonging to other professions. The writings of these 30 authors amount to nearly 40 million words (see Table 7.1).

7.2.2 Queries and annotations

The data set of the NCI comprises 10,901 attestations, retrieved from the written records of 30 authors. Table 7.1 presents their distribution in the sample, along with the word counts of the individual corpora. In what follows, I discuss the general query and annotation procedures.

Tab. 7.1: Data set: Attestations (n) of the NCI by author

ID	Author	EMMA (#wds)	n
103	Davenant, Sir William (1606–1668)	504,413	22
104	Fuller, Thomas (1607–1661)	2,652,292	734
105	Milton, John (1608–1674)	729,624	144
106	Taylor, Jeremy (1613–1667)	3,132,105	770
110	Owen, John (1616–1683)	4,350,175	2,234
111	L'Estrange, Roger (1616–1704)	2,015,050	325
	Total generation 1	**13,383,659**	**4,229**
201	Boyle, Roger (1621–1679)	790,412	31
204	Fox, George (1624–1691)	1,018,398	84
205	Boyle, Robert (1627–1691)	2,082,984	1,234
207	Bunyan, John (1628–1688)	1,330,929	328
209	Tillotson, John (1630–1694)	507,557	171
210	Dryden, John (1631–1700)	1,715,258	208
	Total generation 2	**7,445,538**	**2,056**
302	Whitehead, George (1637–1724)	1,284,629	293
305	Mather, Increase (1639–1723)	1,503,461	573
308	Crouch, Nathaniel (1640–1725)	1,791,125	564
310	Behn, Aphra (1640–1689)	1,039,596	65
311	Crowne, John (1641–1712)	473,022	24
313	Salmon, William (1644–1713)	2,889,362	923
	Total generation 3	**8,981,195**	**2,442**
401	D'Urfey, Thomas (1653–1723)	961,267	56
402	Wake, William (1657–1737)	1,143,686	347
403	Dennis, John (1657–1734)	672,818	242
406	Mather, Cotton (1663–1728)	2,465,566	99
408	Swift, Jonathan (1667–1745)	387,000	107
409	Whiston, William (1667–1752)	508,279	243
	Total generation 4	**6,138,616**	**1,094**
501	Cibber, Colley (1671–1757)	589,993	39
502	Steele, Richard (1672–1729)	541,503	102
503	Addison, Joseph (1672–1719)	487,207	88
504	Oldmixon, John (1673–1742)	942,189	212
506	Hoadly, Benjamin (1676–1761)	425,529	373
508	Jacob, Giles (1686–1744)	593,852	266
	Total generation 5	**3,580,273**	**1,080**
Total		**39,529,281**	**10,901**

The corpus was queried in CosyCat by means of regular expressions consisting of a finite or non-finite form of the verb *to be* followed by a participle of a PCU verb (within a six-word-window) and by *to* (within a three-word-window). All

PCU verbs listed in previous (corpus) studies (Noël 2008: 328; Mair 1990: 237–238; Postal 1974: 297–317; Los 2005: 254) were queried for, including their major spelling variants.

In total, 112 distinct verbs were attested in the NCI, a handful of them not mentioned as PCU verbs in the works cited here. These may have been used in coordination with other PCU verbs or may represent slight variations on well-established PCU verbs, e.g. *think of* in (1), which is attested once. By comparison, the verb *think* occurs 819 times in the NCI. A list of all attested PCU verbs with their respective frequencies can be found in the Appendix (Section 10.3.1).

(1) [...] *they were never* ***thought of****, to be persons competent to make Formes of Prayers themselves:*
(a63653, Jeremy Taylor, 1649)

The queries also yielded several patterns that are structurally similar to the NCI but do not convey the same semantic and structural relations between the subject, matrix verb and *to*-infinitive that characterize the NCI construction (see Section 4.3). Hits that were discarded include the patterns instantiated in (2)–(5).

(2) *For if we prove that neither Parent hath a Title to Baptisme, nothing more needs to be* ***said*** *to prove that the Child hath no Title thereunto.*
(n00149, Increase Mather, 1675)

(3) *For at the Age of Eight and Twenty a Man may be* ***supposed*** *wise enough to know his Own Mind.*
(a38571.0, Roger L'Estrange, 1689)

(4) *But the nature of such Churches, with the Rule and Discipline exercised in them and over them, is too well* ***known*** *to be here insisted on.*
(a53681, John Owen, 1672)

(5) *IT being the intention of Thomas Viscount Falconbridge [...] to Travel into France, and no less his desire [...] to be* ***admitted*** *to Kiss your Royal hands;*
(a50909.a103, John Milton, 1654)

First, it is important to distinguish *to*-infinitives in the NCI from *to*-infinitives of purpose (2) that happen to follow a PCU verb. Thus, in (2), the notional subject of the *to*-infinitive (i.e. *we*) and subject of the matrix verb (i.e. *nothing more*) are not co-referential, whereas in the NCI they always are. Examples such as (3) are similar to the NCI, but are also discarded because they instantiate the so-called "zero-SPC"—a secondary predicate construction with 'zero' markers—as in *consider him handsome / he was considered handsome* (see D'hoedt 2017: 1), not the ACI/NCI with a *to*-infinitive as in *consider him to be handsome / he was considered to be*

handsome (the passive "*to be*-SPC" in D'hoedt's terms). That is, the infinitive *to know* in (3) modifies the adjectival predicate with *wise* (cf. *X may be supposed (to be) wise enough to know*). I also discarded constructions of the type [*(too)* X *to* V] (4), where the participle is essentially adjectival and the *to*-infinitive does not predicate something about the subject. Finally, I excluded non-PCU uses of verbs that can either be two-place 'raising' verbs or three-place 'control' verbs (see the discussion in Section 4.3.2). Thus, sentences with *admit* and *grant* are only included when they instantiate a two-place 'acknowledge' sense (i.e. a cognition verb), but excluded when they instantiate a ditransitive pattern, as in their 'allow/permit' senses (5).

Subsequently, the relevant instances were annotated in CosyCat following the same procedures as described for the prepositional passive in Chapter 6, Section 6.2.3. Basic annotations thus include the master key PASSIVE-CXN (with [SBJ *be* V-*ed*$_{PCU}$ *to* V] as the value identifying NCI constructions), the various construction elements, lemmas, clause type, modality, negation, perfect construction, subject animacy and subject definiteness. One construction element (CXNELE) not mentioned in Chapter 6 is the *to*-infinitive, which forms part of the NCI construction. Here the different values capture both formal and semantic properties of the infinitive. Formally, I distinguish between regular infinitives, perfect infinitives, passive infinitives and passive perfect infinitives, e.g. *murder*, *be murdered*, *have murdered*, *have been murdered* and semantically between stative and dynamic verbs; copula uses of *be* receive a unique value because they represent the most commonly used type of infinitive in the NCI construction.

Another aspect that requires further elaboration is the semantic-pragmatic classification of NCI patterns (SEM) into three usage types, examples of which are given in (6)–(9). I started from Noël's (2008) classification, who distinguishes between evidential, descriptive and regular passive NCIs, but I use terms that arguably make less assumptions and better reflect the formal differences between the usage types. The 'descriptive NCI' was replaced by the formal characterization 'modalized NCI' (MOD, e.g. (6)), 'evidential NCI' (EVID, e.g. (7)) remained the same, and 'explicit evidential' (EVID.EXP) rather than 'regular passive of an ACI' was used to refer to those instances in which either the source or type of evidence is explicitly indicated (e.g. by an agent phrase, as in (8)) or in which the action expressed by the PCU verb is located in space and/or time by means of adverbials (9).[3] In Section 7.3, I justify these choices by elaborating on the semantic-pragmatic differences and commonalities between the usage types, and explain in more detail

3 There is a small rest category "other" (1.5% of the data), which primarily contains (i) indeterminate examples where the distinction between evidential and modalized use is blurred due to the interaction of the NCI with other constructions and (ii) uses of *be supposed to* and *be expected to*

how my classification aligns with and differs from Noël's. For instance, the use of EVID and EVID.EXP reflects my argumentation in Section 7.3 that the perceived difference between these types does not concern their evidential function, and that the latter is in fact a subtype of the former.

(6) *Every Man **may** justly **be said to have** so much need of such a Motive to fortify Him, that he will, too probably, fail without it.*
(0178000100, Benjamin Hoadly, 1755)

(7) *Of this numerous Army, thirty six **are said to be hang'd and burnt**, though the Names of three are onely known, and Sr Roger Acton Knight, the onely person of quality named in the design.*
(a40655, Thomas Fuller, 1655)

(8) *This Synod is also **said by Athanasius to have written** a Synodical Epistle in his Favour to the Egyptian and Libyan Bishops a pretended copy of which he produces.*
(1681700200, William Whiston, 1741)

(9) *In the mean while a blazing Star, 7 Mornings together, about the end of April, **was seen to stream** terribly, not only over England, but other parts of the World;*
(a50902, John Milton, 1670)

For instances classified as EVID.EXP I furthermore tagged the type of EVIDENCE the author provides, distinguishing between agent phrases, instrument phrases, adverbials of time, adverbials of location and reference. This last type represents a rather specific use of the NCI construction that is common in the work of some religious authors, employed to refer to something that is said in the Bible (see Section 7.4 for a discussion). They are related to adverbials of location, which include phrases such as *in the Scripture*, but are not integrated into the clause.

(10) *Hence men **are said to have** their Hearts set upon Evil, Rom. 13.14.*
(a53715, John Owen, 1656)

Again, all key-value pairs are stored as documents in a mongoDB database and subsequently transformed for statistical analysis and visualization. During the data analysis some rather specific category labels have been merged into higher-order

that are ambiguous between the evidential and deontic reading. No examples of a pure deontic reading were found; other corpus studies suggest that the construction only starts to develop deontic readings in the eighteenth century (Disney 2016).

categories. The remainder of this chapter documents the results of the various quantitative and qualitative analyses.

7.3 Semantic-pragmatic usage types

This section provides the theoretical background against which the corpus studies in this chapter were conducted. The present account starts from the classification in Noël (2008), who discerns three separate NCI constructions, that is, three form-meaning pairings that have acquired constructional status. The first, illustrated in (11), is merely the realization of a passive construction, instantiating a "spatiotemporally locatable utterance act"; the other two, the "evidential NCI" (12) and the "descriptive NCI" (13), serve to qualify the proposition at hand (Noël 2008: 317). In earlier work (e.g. Noël 2001), Noël viewed the evidential NCI as a grammaticalized auxiliary-like construction that developed out of the regular passive NCI source construction. This grammaticalization account was rejected in a later paper which suggested instead that the evidential use was most likely borrowed directly from Latin, but that it may have played a role in the increase of the NCI in certain genres in the Late Modern English period (Noël 2008).

(11) *In this book authorities **are said to** be limited also by the kinds of reasons on which they may or may not rely in making decisions* […]
(ANH 148; Noël 2008: 317; emphasis in original)

(12) *BRAVO, a new on-screen booking system* […]*, has entered its launch phase. It **is said to** offer independent hotels the kind of exposure which hotels in big groups can derive from international booking systems* […]
(A0C 456; Noël 2008: 317; emphasis in original)

(13) […]; *in every poem there are striking effects of word order which, on the one hand, may **be said to** have been contrived, or willed by the poet* […]
(J7P 44; Noël 2008: 317; emphasis in original)

The descriptive NCI is said to "link up a description with a descriptum" (Noël 2008: 319), whereas the evidential NCI signals that there is evidence for the speaker's claim. The latter may sometimes have the pragmatic effect of "shed[ding] responsibility for the truthfulness of this information" (Noël 2008: 318). Noël's account is an extension of the ideas presented in Goossens (1991), who distinguishes between descriptive and reportative uses of *say* in terms of Functional Grammar. Noël argues that the three constructions differ in semantics, not in formal composition, and therefore cannot be objectively distinguished from each other (Noël 2008: 317–321).

I would like to argue instead that the different semantic interpretations Noël observes arise from formal differences. Descriptive NCIs are marked as modalized utterances; they locate the underlying proposition in the space of possibilities, i.e. refer to possible worlds rather than real events. This may be illustrated by (13), where leaving out the modal verb *may* would trigger an evidential interpretation. Likewise, adding a modal like *can* or *may* in (12) precludes an evidential reading. Because evidential markers have wide scope, i.e. they semantically scope over propositions, they cannot themselves be within the scope of modal markers (cf. Boye 2010; Nuyts 2017). Incidentally, modal markers in the NCI often seem to function as argumentative devices: what an utterance like (13) does is not fully captured by the definition of linking up a description (*be contrived or willed by the poet*) with a descriptum (*striking effects of word order*). Rather it seems the speaker wants to present an assertion (i.e. that the striking word order effects are contrived by the author) in a tentative manner, i.e. is using the construction as a hedging device. The choice of modal affects the degree of tentativeness; phrases such as *must* or *cannot be said to V* convey a sense of certainty on the part of the speaker.

These pragmatic effects are related to what I believe constitutes the core function of the NCI construction, that is, the speaker's epistemic qualification (EQ) of a proposition *p*, e.g. *that black cats are a symbol of misfortune* in (14) and (15), which predicates something about the subject of the NCI.

(14) *Black cats are said to be a symbol of misfortune.*
'[that black cats are a symbol of misfortune]$_p$ [is said]$_{EQ}$'

(15) *Black cats may be said to be a symbol of misfortune.*
'[that black cats are a symbol of misfortune]$_p$ [may be said]$_{EQ}$'

More specifically, the NCI provides the speaker with a means to express that there is an epistemological basis for *p*. This "epistemological mode", Chung and Timberlake (1985: 244) argue, "evaluates the actuality of an event with respect to a source". In NCI sentences, the speaker asserts this knowledge basis (a) by referring to the existence of an *external* source for the information contained in the proposition, without her having to explicitly name that source (evidential use), or (b) by relying on an *internal* epistemological process which specifies the degree to which the assertion is compatible with the speaker's current knowledge (modalized use).

For clarity's sake, I would like to point out that I am using the term 'epistemic' in a broad sense, i.e. as an umbrella term for the expression of concepts such as "possibility, necessity, inference, belief, report, hearsay, conclusion, deduction, opinion, commitment, speculation, quotation, doubt, evidence, and certainty", following Frawley (1992: 407). This conceptual domain, which may be referred to as "epistemicity" (cf. Boye 2012), subsumes two basic categories: 'judgments'

(involving e.g. the notions of possibility and necessity) and 'evidentials' (cf. Frawley 1992: 408–410, in reference to Palmer 1986; a similar distinction is made by Boye (2012), who uses different terms).[4] According to Frawley (1992: 412), this distinction reflects different deictic viewpoints. He writes:

> The convergence of the expressed world and the reference world is assessed and substantiated from the viewpoint of the *epistemic center*, the source of knowledge or the principal deictic point. Sometimes the *self* is the center of the epistemic stance (as in judgments) and sometimes the *other* (nonself) (as in hearsay). Hence the values that a language chooses to assign to the epistemic center dictate epistemic stance by providing the grounds for the source of the modality itself. From the standpoint of deictic points, there are two options for source of knowledge: self and other (= nonself). (Frawley 1992: 412)

In short, one may argue that NCIs belong to the conceptual domain of epistemicity. What sets the modalized NCI (cf. 'judgments' supra) and the evidential NCI (cf. 'evidentials' supra) apart is that they signal different epistemic centers: the Self vs. the Other.

Yet the NCI conveys more than simply the epistemic center or *source* of knowledge. Here it will be useful to further distinguish between the *mode of access* and the *basis*, following the three-way distinction between source, mode of access and basis as proposed by Izquierdo Alegría and Cornillie (2017) and Izquierdo Alegría (2019). Even though this classification has been developed for the description of evidential markers, it is a useful instrument in comparing evidential and modalized NCIs because they happen to combine several epistemological features. Izquierdo Alegría (2019) discerns three modes of access (direct, reportative, inferential) and three types of bases (sensory, discourse, cognitive). These conceptual distinctions are useful to define the semantic relationship and interaction effects between the NCI construction and the lexical elements that occur in the construction, in particular the PCU verbs.

The modalized NCI, as argued supra, represents a personal assessment by the speaker; the mode of access can therefore be described as inferential. The basis or type of evidence is not central to the modalized NCI. In fact, the PCU verb does not appear to add much in terms of semantics. In the example below, for instance, the interpretation of the sentence would not be much affected if

4 Linguistic phenomena related to epistemic modality and evidentiality have attracted a large body of research, yet no consensus exists on the use of terminology and the exact description of the domains. It goes without saying that the classification presented here is only one of many distinctions that have been proposed in the literature. For surveys, see Boye (2012: Ch. 1) and Wiemer (2018).

the utterance verb *say* were to be replaced by a cognition verb such as *consider*.[5] Because it is often unclear which pieces of evidence might have informed the speaker's internal reasoning process, I will refer to the modalized NCI's basis as 'internal': it represents information the addressee does not necessarily have access to.[6]

(16) *It may be said to be the Motto of Humane Nature, rather to Suffer then to Dye, though 'tis Good however to be always ready for That which Must come at Last.*
(a26505.a112, Roger L'Estrange, 1692)

For evidential NCIs, the situation is different. The class of perception, cognition and utterance verbs[7] maps directly onto the three types of bases discerned by Izquierdo Alegría (2019) (sensory, cognition and discourse), and supplies the addressee with information about the underlying evidence, that is, how a particular piece of information came into existence. Izquierdo Alegría (2019: 226) remarks that there is no direct correspondence between the types of bases and modes of access, e.g. a sensory base need not imply that the mode of access is direct, nor do discourse and cognitive bases automatically lead to a reportative or inferential interpretation.

That basis and mode of access are conceptually distinct is neatly illustrated by the use of the evidential NCI, which is essentially reportative in nature, i.e. discourse-mediated, even though the underlying basis for the evidence, as specified by the PCU verb, may be sensory (e.g. *see*) or cognitive (e.g. *believe*) rather than discourse-related (e.g. *say*). Bednarek's (2006: 643) observation captures the essence of the difference: "What the writer says is that his/her knowledge is in fact based on what a third party has either expressed linguistically (HEARSAY) or mentally (MINDSAY)", whereby mindsay or "quoted mental experience" concerns utterances marked "as having been thought/felt/experienced by a 'Senser'". Consider the following example.

5 As will be shown in Section 7.4, perception verbs are not typically associated with modalized NCIs.

6 In their conference presentation, Izquierdo Alegría and Cornillie (2017) list 'internal' as a fourth base, but a more recent published paper (Izquierdo Alegría 2019) mentions only three, which suggests that 'internal' has been subsumed under 'cognitive'. I will retain 'internal' as a useful concept to describe the basis in the modalized NCI because it deviates from the typical evidence basis that is present in evidentials (e.g. in evidential NCIs, a cognition verb may represent a *belief* by a third party as evidence for the proposition).

7 Verbs of showing are subsumed under the category of perception verbs (Bednarek 2006: 640).

(17) *And then again, the Duke of Norfolk's Coach was seen to come from Prim[r]ose-Hill the Saturday that he went away:*
(a47807, Roger L'Estrange, 1687)

By virtue of the perception verb *see*, we know that the evidential basis is sensory, more specifically visual. The use of the NCI indicates that the source is not L'Estrange himself, and consequently that the writer did not access this piece of information directly, but acquired it through a third party. The effect is created by the unique combination of an 'evidence' verb (PCU verb) and the passive construction that constitutes the evidential NCI. Even though passive constructions do not convey evidentiality as their primary meaning, it is not hard to see how they can develop evidential meanings or overtones as a side effect, as in fact they often do cross-linguistically (Aikhenvald 2004: 116–117; Timberlake 2007: 318). As Aikhenvald (2004: 116–117) explains, passives may develop resultative connotations because they focus on the result of an action or the state an object is in (Stage 1). Like resultatives, passives may then acquire evidential extensions through various stages of inferencing (from visible traces (Stage 2) to inference based on assumption and hearsay (Stage 3) to a general range of non-firsthand meanings (Stage 4)). Additionally, the passive is typically agentless, which makes it a convenient way to avoid mentioning specific agents.

In sum, by specifying how the speaker knows (14) or assesses (15) *p*, both the evidential and modalized use serve to justify or qualify the utterance. If a speaker plainly asserted that *p*, e.g. that black cats are a symbol of misfortune, it would categorically preclude the possibility of an alternate reality and create a binding commitment to the truth of the proposition, which the speaker may not want to make. The NCI allows the speaker to modify that commitment by mediation, hence the incidental pragmatic effects of hedging and shedding responsibility that have been observed in the literature. The semantic nuances that evidential and modalized NCIs typically convey beyond epistemic qualification are summarized in Table 7.2.[8]

Noël (2008) discerns a third type of NCI construction, the plain passive. In contrast to the distinction between the evidential and modalized NCI patterns discussed thus far, the distinction between regular passives and evidential NCIs, which implies a difference in evidentiality, is hard to maintain. The difference Noël proposes seems to emerge from a difference in the perceived genericity of the statement and specificity of the source, brought about by contextual elements,

8 Note that the types of evidential meanings one may discern for English are very similar to the evidential categories that tend to be grammatically encoded in languages across the world (see Willett (1988) for a large-scale survey).

Tab. 7.2: Schematic meaning of evidential and modalized NCIs

	Evidential NCI	**Modalized NCI**
Source	Other	Self
Mode of access	Reportative	Inferential
Basis	Sensory	Internal
	Discourse	
	Cognitive	

rather than an actual difference in terms of evidentiality (see Seuren and Hamans (2009: 154) for a similar criticism). Note that the two types are not distinguished in the original proposal by Goossens (1991), nor in Bolinger's (1974) early analysis. Compare the following sentences.

(18) a. *Black cats are said to be a symbol of misfortune.*
b. *Black cats are said by some to be a symbol of misfortune.*
c. *At that time black cats were said to be a symbol of misfortune.*
d. *In this book black cats are said to be a symbol of misfortune.*
'[that black cats are a symbol of misfortune]$_p$ [is said (by some/at that time/in this book)]$_{EQ}$'

In (18), the NCI encodes the source the speaker has for a particular assertion (i.e. that black cats are a symbol of misfortune), irrespective of whether the utterance act is "spatiotemporally locatable" (Noël 2008: 317). Optional agent phrases and adverbials either specify the source or serve to demarcate the subspace of the reference world in which the assertion holds true, i.e. they modify the basic constructional frame that encodes evidentiality. Theoretically, one could order evidential statements on a cline of genericity (where the more specific examples would be perceived of as the less grammaticalized ones), but the presence or absence of additional detail does not affect their status as evidential markers, i.e. linguistics elements that convey that the speaker has an external source for the information.[9] This is similar to the observation that evidentials can be negated

9 See also Boye and Harder (2009), who argue that evidentiality cannot be restricted to meaning constituting secondary or 'modifying' information. More specifically, while "[i]n actual language use, evidential meaning most often, perhaps, constitutes secondary information, [it may also] constitute primary information – i.e. the evidence for a proposition, rather than the proposition for which evidence is expressed, may be primary, foregrounded information" (Boye and Harder 2009: 27). In other words, the distinction between meaning that is primary information and meaning that is secondary information is distinct from the distinction between non-evidential and evidential meaning.

or questioned (Aikhenvald 2004: 4). In questions, "the speaker concedes lack of complete authority and asks the addressee to act as an authority and correct the deficit" (Timberlake 2007: 317). Thus, I would argue that explicit evidentials, as exemplified in (19), must not be seen as a category in their own right (as Noël 2008 suggests), but rather as a subtype of the evidential usage type.

(19) *This Synod is also said **by Athanasius** to have written a Synodical Epistle in his Favour to the Egyptian and Libyan Bishops a pretended copy of which he produces.*
(1681700200, William Whiston, 1741)

In other languages, too, reportative evidentials may or may not be combined with overt reference to the source, e.g. *SportBild* in the following example of the German reportative evidential *sollen*.

(20) *Auch der FC Barcelona soll laut SportBild abgelehnt haben.*[10]
'According to SportBild, FC Barcelona has declined as well.'

In many cases, Vanderbiesen (2015: 25) notes, a speaker will omit such a specific reference to the source because reportatives "use the reference to the existence of a source only as a means to an end, namely the justification of a proposition". Specifying the actual source, then, appears to be of lesser importance or is indeed conveniently avoided.[11]

To conclude this section, all non-modalized NCIs carry evidential potential by virtue of the lexical content of the PCU matrix verb (e.g. *said*). If the utterance is modalized, the focus lies on the speaker's evaluation of the statement along the dimensions of necessity and possibility. Drawing on recent models from the literature on evidentiality, I discussed the basic semantic nuances each of these types may convey and how they can be categorized. While the distinction between modalized and evidential NCIs is warranted on both semantic and formal grounds, they share the underlying function of epistemic qualification. This is why I will

10 Retrieved from www.tz.de/sport/fc-bayern/fc-bayern-berater-bot-bvb-star-ousmane-demb-l-beim-fcb-an-lehnte-ab-8465881.html.

11 At the same time, *not* mentioning the agent explicitly does not exclude the possibility that the agent is identifiable. For example, analogous to the attested example in (20), one could conceive of a sentence such as *Auch der FC Barcelona soll abgelehnt haben*, without overt reference of the source. The person reading this sentence may still identify the source as *SportBild* if this source were mentioned in the previous discourse or could be inferred by context.

speak of different usage types (reflecting constructional polysemy) rather than two fully separate constructions.[12]

As Colleman and De Clerck (2011) convincingly demonstrate for the double object construction, (polysemous) constructions may undergo semasiological shifts such as specialization. A significant increase in evidential uses of the NCI, which according to Noël (2008) could be responsible for the general increase of the NCI pattern in certain Late Modern English genres, would be indicative of such a constructional change. However, Noël himself refrains from undertaking any quantitative study operationalizing his classification. It is, therefore, still poorly understood how the evidential usage type developed in Early (and Late) Modern English, when the NCI in general was shown to expand, and how possible changes in the evidential NCI might have affected the other established usage type, that is, the modalized NCI (which may also serve to justify the utterance, but does not resort to an external, and therefore perhaps more objective, epistemological source). The present chapter attempts not only to shed light on these specific issues, but also more generally on the scope and limits of constructional change in the linguistic individual.

12 An important reason for not treating them as two fully separate constructions – despite a number of semantic and formal differences – is to account for the underlying schema of epistemic qualification and the shared properties of the two construction types, which need to be represented in some way. The alternative view would essentially treat these two types as accidental homonyms, which is not very plausible. Even the formal difference of the absence or presence of a modal verb is not in itself contrary to the idea of treating them as subtypes of one schema: any lexical verb or construction with a lexical verb may be modified by a modal verb, which will obviously change the meaning of the phrase. One would, however, still view e.g. modalized and non-modalized perfect clauses as instantiations of one schema, at least at some level of abstraction. In constructional polysemy, constructions can have different related senses, which may result in different collocational behavior. Yet, this does not mean they are or should be considered different constructions. Consider, for instance, the lexical item 'book', which may refer to a physical object or to the contents of a long piece of writing. Performing a collocational analysis on these two senses, one would no doubt find different collocational behavior, but intuitively the item 'book' would still be treated as a single construction (I would like to thank two anonymous reviewers of the work presented in Anthonissen (2019) for similar comments and for providing this example). In brief, one could argue that evidential and modalized NCIs are separate constructions, but only if you relate them in a constructional network where they are closely connected horizontally and viewed as instantiations of an underlying schema with more generic semantic properties.

7.4 The relationship between verbs and constructions

This section supplements the theoretical discussion in Section 7.3 by examining the interaction between constructional and lexical semantics in the NCI. The corpus study that was conducted to this end is the first quantitative account of the three construction types proposed by Noël (2008), and the first large-scale empirical study of the NCI's semantics.[13]

In constructionist approaches to argument structure, it is assumed that the verb elaborates the meaning of the construction (Goldberg 1995). Typically, the verbs code the meaning of the construction lexically (such as *give* in the ditransitive construction or *push* in the caused-motion construction), but this need not be the case, e.g. *sneeze* in *she sneezed the napkin off the table*. In the latter example, the verb designates how the motion is brought about, but the idea of motion itself is encoded by the construction. Similarly, the various PCU verbs in the evidential NCI may serve to accentuate the type or quality of the evidence the speaker has for her statement (cf. the notion of 'basis' discussed in Section 7.3). In modalized NCIs, it is arguably the modal verbs that present the main means of elaboration (by positioning the description of the subject along the dimensions of possibility and necessity). In light of these observations, it seems likely that the PCU verb may bear a different relation to the construction depending on usage type; in particular, the question arises if and to what extent the various PCU verbs correlate with particular usage types.

To gauge the relationship between verb semantics and constructional semantics, I carried out a correspondence analysis. Correspondence analysis is a descriptive statistical method that can be used to uncover and visualize the relationship between categorical variables. In addition to providing intuitive graphs, correspondence analysis makes no distributional assumptions (Sourial et al. 2010), which makes it a helpful tool for exploratory analysis. Following Noël's (2008) classification, I discerned three usage types in terms of constructional semantics: evidential (EVID), explicit evidential (EVID.EXP) and modalized (MOD) NCIs. While I have argued in Section 7.3 (contra Noël 2008) that the second one is not fundamentally different from the first in terms of evidentiality, this initial analysis retains the distinction because the results of the correspondence analysis will verify whether the criticism is justified.

13 Detailed diachronic semantic analyses do exist for specific NCIs, most notably for *be supposed to*, which has developed deontic uses (Ziegeler 2003; Visconti 2004; Berkenfield 2006; Moore 2007; Noël and van der Auwera 2009; Disney 2016).

In this study, 112 different PCU verbs are attested in the NCI, with counts for the individual authors ranging between 10 and 69, partly dependent on the overall size of the corpora. Examples (21)–(24) may serve to illustrate some of the patterns found.

(21) *He **is reported not to have suffered** any woman to come in his sight; not because he was a hater of their sex, but because he was to deale with dangerous adversaries, he would warily cut off all occasions of suspition;*
(a40646, Thomas Fuller, 1651)

(22) *In the mean while a blazing Star, 7 Mornings together, about the end of April, **was seen to stream** terribly, not only over England, but other parts of the World;*
(a50902, John Milton, 1670)

(23) *And yet such monsters **are** all the Saints of God **supposed to be**, who, if their Father once give them the least Assurance of the Continuance of his Love, they presently resolve to doe him all the dishonour, despite, and mischeife they can:*
(a53688, John Owen, 1654)

(24) *No child unborn **can be thought to be** Guilty of an actual crime, such as killing the King, or subverting the Government of a Nation; and consequently no Child unborn **can be said to be** Innocent of those actual crimes, as not being the proper subject of actual Guilt or Innocence.*
(a47831, Roger L'Estrange, 1680)

As input for the correspondence analysis, I selected the 50 most frequently attested verbs in the NCI, ensuring that each lexeme has enough instances to produce robust results. In practice, this means that each verb that is included in the analysis has been attested more than 15 times in the NCI construction. Figures 7.1 and 7.2 plot the distributional profiles of the verbs in a two-dimensional space.

How should these plots be interpreted? Correspondence analysis is a statistical method that returns factor scores (principle coordinates) for row and column frequencies (in this case verb semantics and constructional usage types) in a contingency table. These coordinates are used to represent the association between row and column variables in a two-dimensional space. There are two types of correspondence analysis: symmetric and asymmetric biplots. Symmetric biplots represent row-to-row and column-to-column distances in a common space. This entails that PCU verbs (rows) with a similar distributional profile for their usage types (columns) will be found close to each other; usage type profiles (columns) that are similar will also be found closer to each other. However, whereas row-

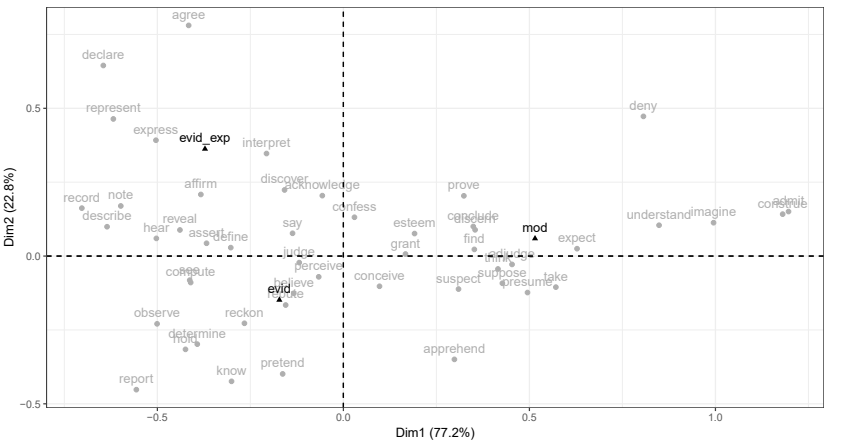

Fig. 7.1: Correspondence analysis of verb and semantic-pragmatic usage type (symmetric biplot)

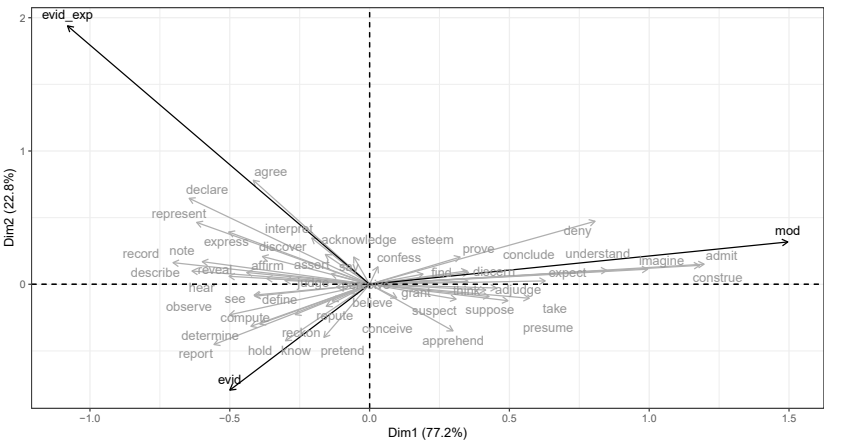

Fig. 7.2: Correspondence analysis of verb and semantic-pragmatic usage type (asymmetric biplot)

to-row distances and column-to-column distances reflect χ^2-distances between the row profiles and column profiles, respectively, symmetric biplots only give a general idea of row-to-column or column-to-row distances and therefore cannot be used to interpret the association between rows and columns (i.e. between PCU verbs and usage types) directly (Bendixen 2003; Levshina 2015). The latter can be achieved by means of an asymmetric biplot, which is essentially the same plot except that it plots column profiles in row space. The acuteness of the angle between the column arrow and the row points reflects the degree of association between the two. Figure 7.1 is a symmetric biplot of the data set; Figure 7.2 represents an asymmetric biplot.

Figures 7.1 and 7.2 demonstrate that many verbs tend to be more strongly associated with one of the usage types. To a certain extent, the distances between the individual verbs (i.e. their distributional similarity in terms of usage types) reflect the subclasses of PCU verbs. Verbs that describe written and oral discourse, e.g. *declare*, *agree*, *represent*, *express*, *record*, *note*, *describe*, *assert*, *define*, *say*, are associated with explicit evidentiality.[14] The distributional profile of *declare* has the smallest angle with EVID.EXP in the asymmetric biplot, which means that it is almost exclusively associated with explicit evidentiality. A possible explanation could be that the verb is lexically associated with a clearly identifiable agent. In Noël and Colleman's (2010) study on collexemes of the ACI/NCI, *declare* is a distinctive collexeme of the ACI between 1640–1780, the period that most closely overlaps with EMMA. In this period, 82% of all ACI/NCI instances with *declare* (n = 33) are found in ACIs, i.e. in active constructions with an overt agent. A similar picture arises with *affirm*, with 88% of all instances appearing in ACIs (n = 17).[15] Verbs such as *declare* and *affirm* furthermore convey more specialized and formal meanings than a basic communication verb like *say*, and evoke the presence of an authority. This may induce the speaker to make her reference to the authority explicit.

Many perception verbs, which include verbs of showing, are also found in close proximity of each other. More specifically, the verbs *reveal*, *hear*, *see*, *compute* and *observe* are clustered on the left side of the graph around the horizontal axis. That is, they are strongly associated with evidential uses, whether explicit or not. Verbs with a high incidence of evidential uses moreover include a cluster of verbs

14 One might have expected that the position of *say* would be closer to 'evid' than it is now. As will become clear in the discussion of Figure 7.3, the position of *say* is influenced by the large number of bibliographical references, which have also been counted as explicit markers of evidentiality.
15 The verbs *represent* and *express*, which are also closely associated with explicit evidentiality in the biplots, are not discussed in Noël and Colleman (2010).

that tend to denote other people's opinions (*believe*, *repute*, *perceive*, *judge*, *hold*, *reckon*).

The verbs found on the right of the vertical axis are associated with modalized uses and belong primarily to the subclass of cognition verbs. Their being situated in close proximity of each other underlines how similar their distributional profiles are. At the same time, not all cognition verbs exhibit this preference. The cluster of 'opinion' verbs, for instance, is more often attested in evidential uses, and some cognition verbs fall in between categories (e.g. *confess*, *conceive*).

Overall, utterance and perception verbs tend to express evidentiality, which ties in with their semantics. Cognition verbs are often associated with the modalized use, but this tendency is certainly not as strongly borne out as in the case of verbs expressing (explicit) evidentiality. The findings are consistent with the meanings that were discerned for the evidential NCI and modalized NCI in Table 7.2, in particular at the level of the basis. For the evidential NCI, the evidence base can be sensory, discourse-related or cognitive; every single one of these categories is represented in the correspondence analysis by specific PCU verbs that are found to correlate with explicit and/or plain evidentials. In modalized NCIs, the basis is internal, hence the predominance of cognition verbs. The correspondence analysis reflects the dual functionality of cognition verbs, which are commonly attested in both evidential and modalized NCIs.

The results bear directly upon the theoretical discussion concerning the constructional status of the three NCI constructions proposed by Noël (2008). Seeing that 77% of the variance is explained by the first dimension (modalized vs. evidential/explicit evidential, cf. 'Dim1'), the graphs support the view presented in Section 7.3 that there are basically two rather than three main constructional usage types. The column-to-column distances in Figure 7.1, i.e. the distances between the usage types, show that the modalized use and explicit evidentiality are furthest apart. The plain evidential use is situated in between, but closer to explicit evidentiality. The second dimension ('Dim2'), which separates plain and explicit evidentials, only accounts for 23% of the variance.

One can also compare the profiles of the individual PCU verbs. Verbs associated with the modalized NCI are much more clustered than verbs that are situated on the left side of the vertical axis. As demonstrated above, the variation in (explicit) evidential uses mirrors the three different types of bases rather than a fundamental difference between explicit and non-explicit evidentiality. Further support comes from the observation that some of the verbs most strongly correlated with explicit evidentiality are lexically (rather than constructionally) associated with an explicit agent. The category of evidentials being situated nearest to the intersection of the dimensions (i.e. the average profile) furthermore demonstrates that evidentiality is the prototypical meaning associated with the NCI.

Consequential to these findings, the following sections will reject the distinction between explicit and plain evidentials and implement the two-way classification into modalized and evidential NCIs as discussed in Section 7.3. It may nevertheless be of interest to first have a closer look at the distribution of explicit markers of evidence in the subordinate category of evidential NCIs to further substantiate this decision. Figure 7.3 illustrates the extent to which explicit markers are present in evidential NCIs (n = 7,525), and specifies how the utterance is modified by means of agent or instrument phrases and adverbials of time and place. Note that time and place adverbials are only marked if they modify or constrain the event expressed by the PCU verb, that is, if they make the act "spatiotemporally locatable" in Noël's (2008: 317) terms. For reasons that will soon become clear, it is useful to distinguish *say* (n = 3,132) from the other PCU verbs (n = 4,393).

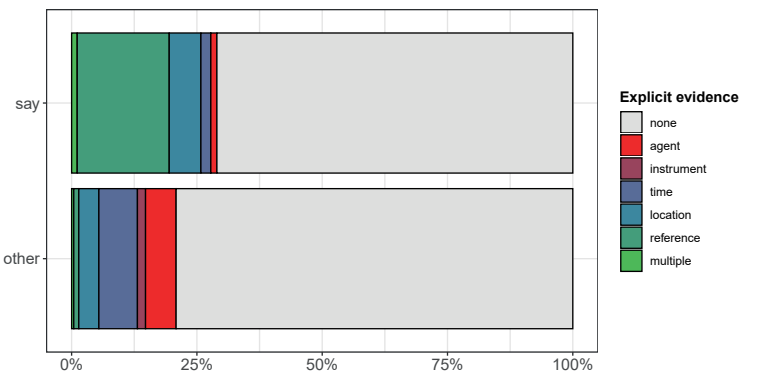

Fig. 7.3: Explicit evidence in evidential NCIs

The most remarkable difference between evidential NCIs with *say* and other PCU verbs concerns the high incidence of the reference category in *say*-NCIs, which refers to sentences that contain an overt reference to the place in a book where something was said, e.g. *Rom. 13.14.* in (25). Unlike plain adverbials of location, which include phrases such as *in the Scripture*, these references are not integrated into the clause.

(25) *Hence men are said to have their Hearts set upon Evil, Rom. 13.14.*
(a53715, John Owen, 1656)

The use of this type of evidential NCI is highly specialized. Only 12 out of 30 authors use the reference category in their writings, 10 of them religious authors (of a total of 12 religious authors). For the other two non-religious authors, the reference category

is attested only once or twice so that its use can hardly be said to be entrenched. Given the predominance of religious authors, it should not come as a surprise that in the vast majority of instances the authors cite from the Bible. It seems obvious that religious authors overtly refer to the Bible in order to add credibility and objectivity to their statement. The evidential NCI in these cases does not only refer to an external source as the epistemological basis for the proposition, it also attributes the statement to an authority, to God himself if you will. This signaling of 'Godsay' (as a special type of hearsay) is so powerful that some religious authors use overt (biblical) references very extensively, with Increase Mather, John Owen and John Bunyan employing this strategy in 33%, 25% and 24% of their evidential NCIs. This specific use of the evidential NCI is moreover largely restricted to the *say*-NCI; the difference in the use of overt reference in evidential *say*-NCIs versus NCIs with other verbs is statistically significant at $p < 0.05$ in 6 of the 10 religious authors with overt reference (Fisher exact, two-tailed). The non-significance in 4 authors might be due to the low absolute number of reference instances in these authors (see Appendix, Section 10.3.2, for details).

The other markers of explicit evidentiality are all proportionally less common in *say*-NCIs, with the exception of adverbials of location (which include a good deal of 'Godsay' references in a more elaborate form, e.g. *in the Scripture*). As argued above, these markers do not affect the evidential quality of the statement, rather they modify it. A closer inspection of the agent phrases may illustrate this (n = 311). While evidential NCIs mark the source of information as being external, agent phrases typically serve to provide more information about this unnamed Other. Identification and quantification can be discerned as the two main functions; they can also be combined, see Table 7.3.

The author might identify a specific group or person as the source of information. The reasons for doing so can be varied, but often the agent has some sort of authority concerning the main proposition. Consider the following examples.

(26) *They are reported **by Plutarch** to have lived very long, many to an hundred and twenty years.*
(12259654, Nathaniel Crouch, 1685)

(27) *All the World holds the Spaniards to be a wise Nation—and **by them** the Gout is noted to be the greatest Clearer of the Understanding—imaginable.*
(447100900.a1, Thomas D'Urfey, 1703)

(28) *He had a young Kinswoman to keep his house, who was **by the Neighbours** suspected to be with Child,*
(14872472, Nathaniel Crouch, 1682)

Tab. 7.3: Agents in evidential NCIs

Type	n	%
Identification	197	63.34
Group	116	
Person	63	
Person (Bible)	18	
Quantification	81	26.05
All	24	
Most	2	
Many	20	
Several	1	
Some	34	
Combined	23	7.40
Other	10	3.22

In the first example, the agent is a famous biographer; in the second, it is a wise nation, which the reader is reminded of in the preceding clause. The neighbors, in (28), are arguably not the most representative of reliable sources, but in the present example they may be considered to have special, first-hand knowledge concerning the situation of the woman because they live next door and might have actually seen signs of pregnancy.

The second function is to quantify the external source. The speaker then indicates how many Others act as a source of information. In the evidential NCI, the most frequently used subcategories are *some*, *many* and *all*.[16] Quantifiers may be used to convey a degree of certainty or reliability. In (29), the evidential NCI refers to the existence of an external source to claim that the contents of the *Book of Prescription* are catholic. The agent phrase *by all* in (29) underscores that this piece of information is not contested. This, in turn, serves to back up the second claim that the contents were written when Terullian was 'completely catholic'; this second proposition is couched in a modalized NCI (*ought to be supposed to have been written*), which marks it as being inferred by reasoning (source = Self).

(29) *As to the first Point, the Reasons I go upon why I affirm the Book of Prescription was written by Terullian, while he was compleatly Catholick; they seem to me very plain and cogent, and are these: (1.) Because its entire Contents are* ***by all*** *confess'd to be perfectly Catholick; and therefore, in all Reason, ought to be suppos'd to have been written by him, when he was himself compleatly*

16 The category *all* includes other universal quantifiers such as *any/none*, *anyone*, *no one*.

Catholick.
(1607301900, William Whiston, 1720)

This section set out to clarify the interaction between constructional and lexical semantics in the NCI. It was shown that the distributional profiles of the PCU verbs and their association with the usage types is much in line with what the theoretical model, presented in Section 7.3, would predict. In particular, the results of the corrrespondence analysis support the argument that one should distinguish between two rather than three usage types of the NCI, that is, between evidential and modalized NCIs. An analysis of agent phrases and other modifiers underscores the idea that the perceived difference between plain and explicit evidentials is a matter of genericity rather than evidentiality.

7.5 Patterns of variation and change

This section starts from Noël's (2008) hypothesis that the NCI's increase in certain Late Modern English genres is brought about by an increase in evidential uses. The EMMA corpus, which covers the late Early Modern English period and the transition into Late Modern English (ca. 1620–1760),[17] offers an excellent testing ground to examine what could potentially be the initial stages of the rise of the evidential NCI. After a brief overview of the somewhat convoluted general frequency developments, I zoom in on the construction's semantic development, with a particular focus on longitudinal intraindividual change. The third and final section concentrates on lexically filled patterns and probes whether aggregate associations between matrix verb and usage type reflect individual usage. I conclude my discussion with two cases of idiosyncratic variation in the *say*-NCI.

7.5.1 Frequency

Previous corpus studies have documented the aggregate community-level frequency development of the NCI in the Early and Late Modern English period. For Early Modern English, the data are straightforward and show a consistent upward trend: between 1500 and 1710 the normalized frequency of the NCI more than triples, from 67 attestations per million words in the first subperiod, to 145 in the

17 The material is of course sparser for the first and final decade covered by EMMA, as fewer authors were active. In this sample of EMMA (based on the corpus data of 18 authors), the pre-1630 data comprise roughly 57,000 words, the post-1650 corpus approximately 140,000.

second and 222 in the third (n = 249, based on the PPCEME; see Table 6.24 in Dreschler 2015: 370). In the centuries that follow, the NCI's frequency development is more convoluted and does no longer uniformly follow the upward trend that characterized the early modern period. Dreschler's (2015: 370) data from the PPCMBE show a fall-rise-fall pattern in the eighteenth and nineteenth centuries, with a frequency of 188 NCIs per million words as the weighted average across the three subperiods. This is slightly below the count at the end of the early modern period. Drawing on data from the CLMET corpus, Noël (2008: 330–331) records a steady decrease in the NCI in Late Modern English, from 172 instances per million words in late Early Modern English (1640–1710) to 108 instances toward the turn of the twentieth century (1850–1920). However, because this corpus contains mainly fictional texts, the decline is likely genre-related. In ARCHER, a much smaller corpus, Noël (2008: 334) notes a frequency increase in news, scientific and medical texts. The corpora Dreschler (2015: 365–366) uses are more balanced in terms of genre than CLMET, but she also mentions genre sensitivity as a possible explanation for the difference between the early modern (PPCEME) and (late) modern (PPCMBE) data, and for the use of the NCI construction in general, as it appears to be overrepresented in some texts. It is safe to conclude from these findings that the NCI firmly established itself in the English grammar over the course of the early modern period, but that its subsequent development is much more muddled. The NCI's overrepresentation in some texts (i.e. in the language use of particular individuals) and genres suggests that novel insights could be gleaned from extending our view beyond community-level developments. This is where the EMMA corpus comes in.

Figure 7.4 presents the longitudinal frequency development in individual usage. It consists of 30 panels, which refer to the 30 authors that were investigated in this study. Each row represents the authors of one of five generations, both of which can be identified by means of their IDs (the first number of the ID indicates the generation). The same method as in Chapter 6 was used for visualizing change: The color of the line signals the rate of change as computed by taking the first and last robust periodical value, i.e. where the corpus size in that age range is not below 25,000 words.

The longitudinal data show considerable variation: 12 authors (40%) exhibit a rate of change that is less than ±25%, 11 authors (37%) show a moderate to strong increase and the remaining 7 show a lifetime decline (23%). Narrative authors (12/30) have lower frequencies across the board, but the general frequency decline in Late Modern English fiction that Noël (2008) describes has not yet uniformly set in. While there is a lifespan decrease in four narrative (against two religious) authors, six narrative authors, three of them fourth- or fifth-generation EMMA authors, intensify their use of the NCI construction over time. Religious authors (12/30) tend toward lifespan stability (6/12) or increase (4/12). In the rest

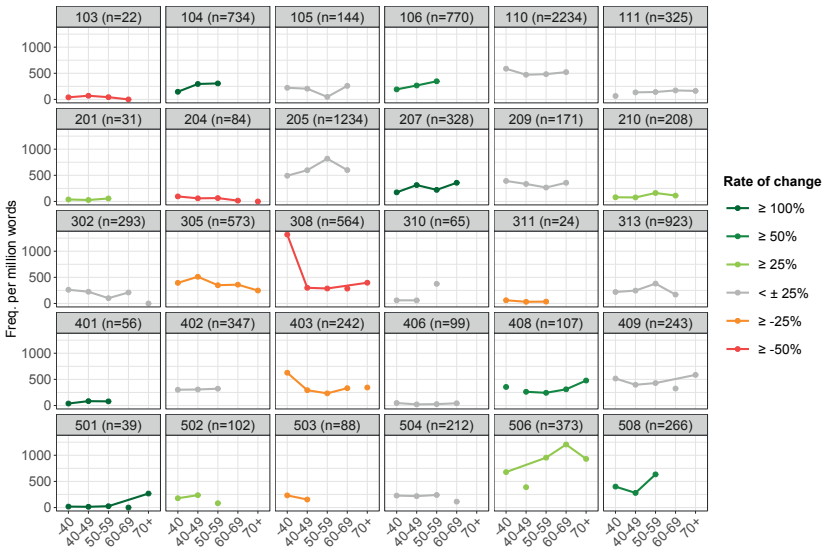

Fig. 7.4: Normalized frequency across the lifespan

category (6/30), four authors have a rate of change that is less than ±25%. Two of these, the scientist Robert Boyle (ID 205) and the physician William Salmon (ID 313), actually exhibit a steady increase across the largest part of their careers, but show a retrograde development in the final decade. The only legal writer in the sample, Giles Jacob (ID 508), also shows a considerable increase of the NCI during his lifetime. Boyle, Salmon and Jacob furthermore belong to the most avid users of the NCI; their average normalized frequencies (592, 319, and 448 attestations per million words, respectively) are well above the weighted community average (257). Genre evidently influences the overall frequency of use, but it does not appear to affect the potential of a lifespan increase per se. Within the constraints of lower overall frequencies of usage, narrative authors, too, are commonly found to intensify their usage of the NCI. The data of authors practicing more specialized formal genres (science, medicine and legal texts) suggest that these genres could well constitute an area of growth for the NCI construction.

The frequency development at the aggregate level of language is quite different from that of the prepositional passive, which exhibited a strong and very steady growth. The NCI does not show anything near a consistent diachronic or generational increase. By contrast, the generational averages show a slight decline in the first three generations, a substantial drop in the fourth generation, and then an increase to old levels. An important caveat with these findings is that the sample

used in this chapter is less suitable for community-level trends than the text-based sample used for the study of the prepositional passive, as it is less balanced in terms of individual corpus size (all material is included) and comprises fewer authors (30 instead of 50). However, my cautious conclusion is that the community-wide frequency of the NCI has more or less stabilized around the turn of the century. Individual behavior must be interpreted against this background. Whereas the rise of the prepositional passive at the aggregate level of language is paralleled by lifespan and generational changes in the language of (a critical number of) individuals and/or groups of speakers, lifespan changes with regard to the NCI do not percolate through the community. As I will argue below, these occasional lifespan increases reflect at times isolated idiosyncratic developments of the NCI that do not have the potential to disrupt or steer the community-wide trend.

7.5.2 Usage types

The foregoing sections have illustrated the NCI's semantic-pragmatic potential in much detail. What is at stake here is the diachronic development of these functions. If, as Noël (2008) speculates, the evidential NCI is on the rise in Late Modern English, the period covered by EMMA (ca. 1620–1760) might capture the initial stages of this development. In addition to a potential diachronic semasiological shift in the use of the NCI, the question arises whether such a development might occur within the lifetime of an individual speaker. By examining in what way or to what purpose a construction is used across different stages in the authors' lives, the present section adds semantic-pragmatic change to the picture and can thus shed new light on the extent of constructional change across the lifespan beyond the frequency changes already attested in the previous section and in Chapter 6.

In examining the distribution of semantic-pragmatic usage types, I compare the proportion of evidential versus modalized uses of the NCI. A small number of indeterminate examples (less than 1.5 % of all instances), tagged as 'other', are not included in these counts (see Section 7.2). In line with the findings outlined in the previous sections, explicit evidentials are subsumed under the category of evidentials. Figure 7.5 captures the distribution of individual rates across generational cohorts. Each data point represents the proportion of evidential uses in one author's set of NCI attestations and each box symbolizes the variation across six data points, i.e. six authors. The generational average is indicated by the X-symbol. Because this average is weighted across the six authors in each generation, it offers a more accurate picture of the generational trend than if one were to take the unweighted average and ignore the large individual differences in corpus size.

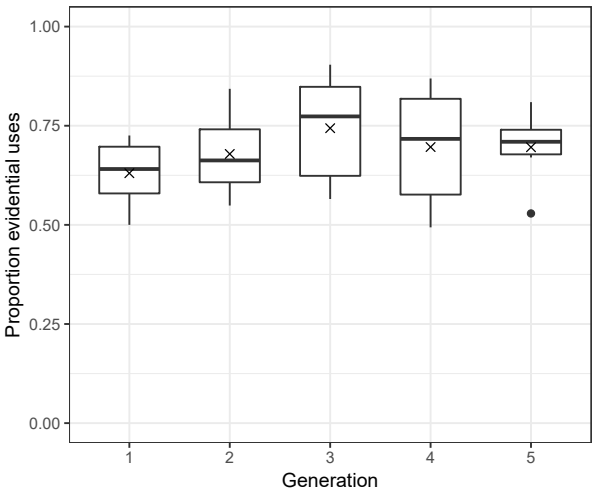

Fig. 7.5: Distribution of usage type rates per generation

The generational medians and averages show a clear upward trend in the proportion of evidential uses in the first three generations, after which there is a slight drop and stabilization in the fourth and fifth generations at roughly 70%. The modalized NCI remains in use as a minority pattern, accounting for ca. 30% of the examples. It appears that the evidential NCI was increasingly favored up until a certain point, as no full replacement occurs. Such a ceiling effect is perhaps reminiscent of stable variation found in variationist studies, for instance the verbalization of the gerund, which stabilizes at roughly 90% in Late Modern English, with some degree of individual variation remaining (Fonteyn 2017). While the rise of the verbal gerund is commonly described as a substitution process, the nominal gerund retains a level of functionality as a result of niche formation (Fonteyn 2017). Two insights are particularly pertinent to the present findings. First, in true alternations, one variant may survive by developing specialized functions. Second, authors may differ in the extent to which they alternate. In the period of stabilization, the range of interindividual variation in the proportion of nominal gerund/verbal gerund uses is roughly 20%, ignoring a couple of outliers (cf. Figure 3 in Fonteyn 2017: 257, which excludes non-alternating authors). The case of the NCI is of course quite different (it is not an alternation), but it is no surprise that despite the fact that younger generations develop a stronger inclination for the evidential NCI, the modalized NCI remains a viable option. The variation continues to exist, and still exists today, because it is associated with a difference in meaning or communicative intent. At the constructional level, however, the meaning of

epistemic justification comes to be primarily associated with an external source. That is, the NCI construction undergoes a semasiological shift by specializing into evidential meanings. The modalized NCI does not disappear, but retains its own functional niche of epistemic qualification, favoring two basic types of modalities: necessity (primarily with *cannot*) or possibility (*may*, *can*).

As most (complex) changes, the semantic development of the NCI between generations 1 and 3 proceeds in a gradual fashion, with a considerable degree of generational overlap. Does such a subtle change only surface above the level of individual usage? Or can semasiological preferences change during the lifetime? These questions are probed by tracking the NCI's semantic development across different stages in adulthood, the results of which are visualized in Figure 7.6. The individual trend lines of evidential versus modalized usage are of course exact mirror images, but they highlight the degree of categoricalness with which speakers use the two types. To reduce spurious results, the values of age bands with fewer than 6 attestations are not connected. I consider the absolute frequency of instances rather than periodical corpus size because the computation of proportions is likely to lead to extreme values if the number of attestations is low.[18]

For some individuals the data set is too small, generally speaking or because of a short career, to make any substantive claims about the reality of a constructional change. Still, taken together, it is highly relevant to consider the generational trend in light of individual behavior. The findings corroborate the view that change does not exclusively proceed between generations, but can happen within a single generation and can be amplified by change during the lifetimes of individual authors.

The statistical analysis of the longitudinal trends, details of which can be found in the Appendix (Section 10.3.3), is based on Kendall's rank correlation coefficient, a non-parametric statistic used to estimate a rank-based measure of association. When applied to the variables age and usage type, this measure detects the significance and strength of the association and the direction of the trend. The modalized use was ranked 0 and the evidential use 1, which means that a positive correlation between age and the evidential use will result in positive z-scores and tau coefficients (τ) and a positive correlation between age and the modalized use in negative z-scores and tau coefficients (i.e. a negative correlation between age and the evidential use). Tau coefficients are in the range [-1,1] with 0 signaling the absence of an association. In addition to the author ID, the labels in Figure 7.6

18 I am fully aware that 6 is a rather trivial cut-off point, but a trade-off had to be made. I opted to mark the most spurious results (i.e. those that are based on only a handful examples) visually by not connecting them to the data points that are robust.

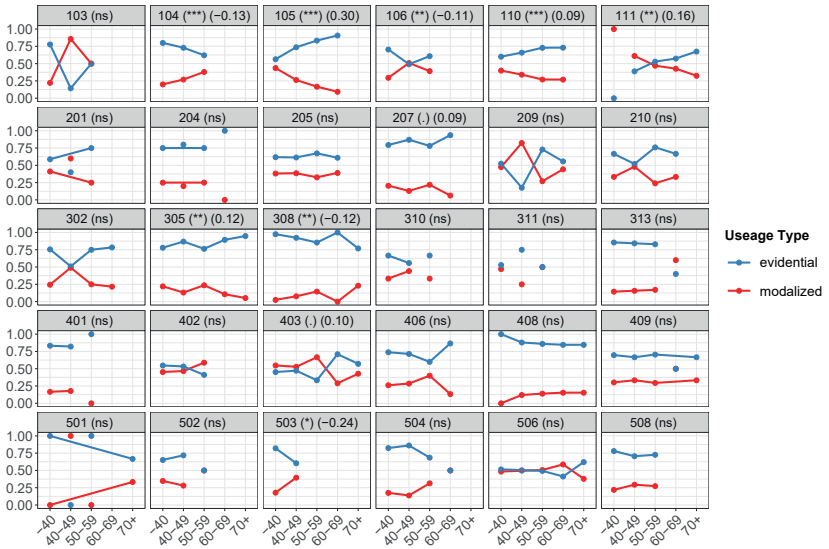

Fig. 7.6: Distribution of usage type rates across the lifespan

include the level of significance following the conventions listed in the List of Abbreviations. If the association is significant at $p < 0.05$ or at least marginally significant ($p < 0.10$), the labels also list the tau coefficient, which signifies the direction and the strength of the association.

In most authors, there is no statistically significant correlation between age and usage type (20/30 authors or 67%); eight authors reach significance at $p < 0.05$ and the remaining two are marginally significant (33%). There is a remarkable generational divide in the extent of lifespan change. In the earliest-born generation, five out of six authors undergo a significant lifespan change. Milton (ID 105), Owen (ID 110) and L'Estrange (ID 111) exhibit a monotonic increase in evidential uses; Fuller (ID 104) and Taylor (ID 106), by contrast, come to prefer the NCI's modalized use. Later-born generations each have only one or two authors with a significant lifespan change. Intergenerational discrepancies are further manifested in the direction of the trend lines. With the clear exception of Fuller and Taylor (on whose results, see below), most authors in the first three generations show either an increase or relative stability in the proportion of evidential uses. This is reflected in the tau coefficients (cf. Appendix, Table 10.3.3), which are largely positive. In line with the general trends discussed above (see Figure 7.5), the turning point appears to be situated in generation 3, after which the proportion of evidential uses no

longer increases. At the individual level, there are still a couple of authors to be found with a growing inclination for evidential uses (e.g. Dennis, ID 403).

Some of the individual and generational differences in lifespan trends should be understood in relation to the categoricalness of speakers' choices. Consider Nahkola and Saanilahti's (2004) findings. In a panel study pertaining to various phonological and morphological changes in Finnish, they suggest that the possibility of lifespan changes relates to the categoricalness with which variants are acquired:

> If a speaker, as a child, "learns" a feature with little or no variation in it, no major changes are likely to take place during the speaker's lifetime. […] If, however, a speaker adopts a feature as a variable one, […] it is possible that the balance of the variants will shift during the speaker's lifetime. (Nahkola and Saanilahti 2004: 75)

The latter applies to the NCI construction as well. Under the assumption that all EMMA authors had acquired the NCI with its two variant uses by the time they were adults, they may in principle shift their preferences during their careers. Indeed, none of the authors uses the NCI categorically in either evidential or modalized form, yet they do exhibit varying degrees of categoricalness, which goes some way toward explaining the aggregate tendencies and the tipping point in the middle generation. Broadly speaking, the preference for evidential NCIs is not yet as pronounced in the first generation as it is in the third. Because first-generation authors start out with a comparatively variable use of the NCI, they have more room for change, hence the predominance of significant lifespan change in this generation.

The first-generation data are interesting from another angle as well since they suggest that individual differences in categoricalness of use and the direction of change might interact with social factors. The observation that Milton (ID 105), Owen (ID 110) and L'Estrange (ID 111) develop an ever-increasing preference for evidential NCIs with time is concurrent with the aggregate development, and therefore hardly surprising from the view of social accommodation. Why is it then that the three other first-generation authors show the exact opposite behavior? One explanation might be that it is due to social accommodation nevertheless, but prompted by the discrepancy between a fairly strong degree of categoricalness in these authors' early career and a more variable distribution of evidential and modalized uses in the generation at large. In Milton (ID 105), Owen (ID 110) and L'Estrange's (ID 111) earliest writings, the difference between modalized and evidential uses does not exceed 20%; the evidential use slowly gains ground and prevails toward the end of their lives. Davenant (ID 103), Fuller (ID 104) and Taylor (ID 106), by contrast, are more categorical in the beginning of their careers, with

evidential uses accounting for roughly 75% in each case, but become less stringent in their choices over time. In both groups, the direction of the change relative to the initial stage reflects an approximation of the generational average and a continuing crystallization of this use over time. Dennis (ID 403), the only fourth-generation author showing a (marginally) significant lifespan change, also shifts from a more extreme position to the generational mean.

A similar case of lifespan change toward the community average is discussed in Standing and Petré (2021), also on the basis of EMMA. In this study on the use of clefts across the lifespan, Standing and Petré observe, among other things, that an innovative author regresses toward the level of the average speaker, while a conservative one approximates the population mean from below. Their analysis furthermore demonstrates that individuals, even if they move in similar circles and come from relatively homogeneous backgrounds, can undergo lifespan change in various directions if the construction at hand is polyfunctional and in flux, but not necessarily moving in a "single 'right' direction" (Standing and Petré 2021: 159). In such cases, "the community shows uncertainty as to [the construction's] functionality, and individual speakers may therefore continue to crystallize their own usage beyond adolescence" (Standing and Petré 2021: 159).

Much like the early modern cleft, the early modern NCI construction can be characterized as polyfunctional and undergoing change. Yet, the longitudinal changes in the NCI *do* reveal directionality at the community level, which is manifested in the growing prominence of evidential uses. As various panels in Figure 7.6 indicate, many speakers pick up on this and emulate the societal norm, attuning their own usage to that of their peers. Even so, the dual functionality of the NCI leaves the door open for individual change that runs counter to the communal trend. Because the modalized NCI expresses conventionalized meanings that are related but distinct to those of the evidential NCI, its continued existence is not fundamentally threatened by the rise of the latter. The changes we observe in syntactic constructions such as NCIs and clefts are therefore typically less pronounced than so-called replacement changes in the lexical, morphological or phonological domain (well-known cases in the history of English include pronominal replacement (*thou* → *you*) and the change in third-person verbal suffixes (*-th* → *-s*), cf. Raumolin-Brunberg (2005) for a lifespan account).

Retaining a functional niche in the expression of epistemic justification, the modalized NCI continues to be exploited as a rhetorical device to the extent that some speakers may solidify, i.e. entrench, this usage of the NCI over time, flouting the semasiological shift happening in the population at large. An added difficulty in assessing individual trends is that other factors may obscure the locus of change. For instance, in a comparison with other first-generation authors, Fuller's (ID 104) early writings reveal above average use of the evidential NCI, but after that a

decline sets in. Social accommodation to the community average is one possible explanation, but further analysis suggests that idiosyncratic developments are at play, which will be discussed at length in Section 7.5.3.2. In brief, Fuller's changing behavior in terms of semantic-pragmatic liking bears on specific instantiations of the NCI (i.e. those with the matrix verb *say*), which goes to show that idiolectal preferences may seize aspects of a construction in unpredictable ways, and at lower levels of schematicity. Such insights are crucial for both the study of language change and cognition.

Importantly, the results in this section provide evidence for the broader claim that constructional changes affecting syntactic constructions are not restricted to childhood and adolescence, but may continue throughout the lifespan and may persist well into old age. Beyond increases or decreases in token frequency, i.e. intensified or diminished use, lifespan change may involve more qualitative aspects of a construction, such as the way in which it is used, or to what purpose. For some, this is a matter of style, not grammar. One could indeed argue that the cross-individual trend towards more evidential uses with age in many first- to third-generation authors is not a constructional change, but a stylistic one. This raises the pertinent question of why this would be the case: why would speakers adopt a preference for the evidential NCI over time, if not on the grounds that the NCI specializes into a reportative evidential? Although the possibility of cross-individual stylistic change cannot be excluded, a number of observations seem to support the view that the shift reflects constructional change instead.

First, the change is not restricted to a single genre, but is found in authors belonging to different professional groups. This is not to say that genre has little impact on constructional usage. Quite the contrary, genre is usually a good predictor of frequency in the sense that certain topics and styles may induce or obviate the need for a construction like the NCI. Genre may thus regulate the average proportion of evidential uses or the frequency of the construction, but the direction of the change appears to be independent of genre, as the construction's semasiological shift is attested across individuals and genres. Recall the discussion on the dispersion of the prepositional passive, where it was also found that genre affected individual variation in the degree of dispersion, but not the directionality and the rate of change at the communal level.

Second, the rise in the proportion of evidential uses as compared to modalized ones is often accompanied by an increase in the normalized frequency of the evidential NCI, whereas the normalized frequency of the modalized NCI drops. Figure 7.7 zooms in on the six authors with a significant lifespan increase in the proportion of evidential uses (see Figure 7.6 and Table 10.3.3) to determine how the distributional shift interacts with the frequency development of both usage types.

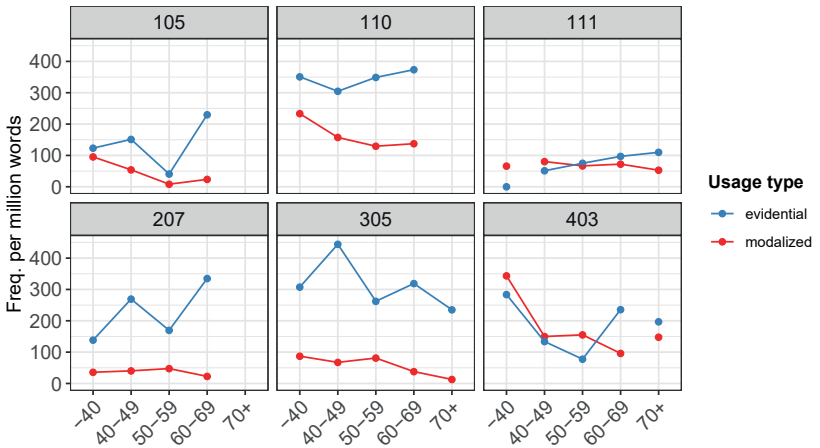

Fig. 7.7: Follow-up analysis of lifespan change in 6 EMMA authors

All six authors reduce their use of the modalized NCI over time. In Bunyan (ID 207), the decline is less pronounced, but visible nonetheless if one compares the first and last age band. Four out of six authors—Milton (ID 105), Owen (ID 110), L'Estrange (ID 111) and Bunyan (ID 207)—simultaneously intensify their use of the evidential NCI.[19] The two later-born authors, Increase Mather (ID 305) and Dennis (ID 403), behave differently. Mather shows a concurrent decline of both modalized and evidential NCIs, but while the former all but disappears from his writings, the latter remains in regular use. In Dennis, the two types are much more balanced and decrease roughly in tandem until later in life, when evidential uses rise again.

On the whole, it appears that one subset of meanings—attribution of *p* to a (usually) unspecified information source—gains in strength of representation, while the other meaning—the speaker's evaluation of *p*—fades, not only proportionally, but also in absolute terms. This frequency effect attests to a semasiological shift that may arguably signal the NCI's specialization into a (dedicated) reportative marker and as such its growing emancipation from the passive construction.[20] Data from Present-Day English furthermore show that several PCU verbs (e.g. *say*,

19 In Bunyan's case, the rise of the evidential NCI coincides with the frequency increase of the *say*-NCI, which is the most prominent matrix verb in Bunyan's data. Bunyan uses the *say*-NCI primarily in its evidential use (92%) and grows more fond of it over time (from 124 to 348 instances per million words).

20 Note that the NCI's 'functional emancipation' from the passive also affects the onomasiological space, where the construction enters into competition with constructions that convey pragmatically similar meanings (cf.Schmid 2020: 157–158 on paradigmaticalization).

rumor, *repute*) only occur in the NCI, but not in the ACI,[21] and that the former is subject to fewer restrictions regarding the use of infinitives other than *be* and *have* (including passive and perfect infinitives) (see Noël 2001: 257–259; Mair 1990: 176). These unique properties attest to the view that the NCI is more than just a passive; it is a *construction*.

7.5.3 Lexically filled NCIs

A central issue in constructionist and usage-based theories concerns the tension between the specific and the abstract, i.e. between constructional meaning and lexical meaning of the component parts, which condition each other (Bybee 2013: 65; Perek 2015: 213). In the NCI, constructional meaning (i.e. epistemic justification) governs and constrains the types of verbs that may occur in the construction. Not every verb that is eligible in the passive is semantically compatible with the NCI, only PCU verbs are. At the same time, constructional meaning derives from rich and lexically specified exemplars so that the pattern comes to be associated with the lexical items that most frequently occur in them. We also saw earlier that the presence of modals overrides the prototypical evidential reading, retaining the abstract meaning of epistemic justification, but adding reference to the speaker's assessment of the proposition. Correspondence analysis furthermore revealed that the use of PCU verbs correlates to some degree with the semantic-pragmatic readings of the NCI. The conventionality of such correlations is established by and continually negotiated in concrete usage events. The present section asks to what extent aggregate associations between matrix verb and usage type are shared among individual speakers, and finds that the answer strongly depends on the PCU verb at hand. I then provide some illustrations of how lower-level constructions, i.e. lexically filled patterns, may start to crystallize in individual usage if the community at large is undecided or flexible as to its functionality.

21 This has not necessarily always been the case. Searching the (entire) EMMA corpus for the respective matrix verbs followed by 1–4 words and a *to be* infinitive yields 19 relevant instances of the ACI with *say* (i), 24 with *repute* (ii) and none with *rumor*.

(i) *I hope by this time, the Way he takes to prove George Fox what he wickedly* ***sayes*** *him to be, is evidently detected of Insufficiency,* [...] (a54224, William Penn, 1672)

(ii) *They* ***repute*** *the Papists to be Hereticks,* [...] (a27015, Richard Baxter, 1657)

7.5.3.1 Interindividual variability

Concentrating on the top 15 NCI matrix verbs, I examine the individual usage basis of population-level distributions. Figure 7.8 presents the aggregate semantic usage profiles of the most frequent matrix verbs (excluding indeterminate examples tagged as 'other', cf. Section 7.2). The verbs are arranged in descending order by the percentage of evidential uses.

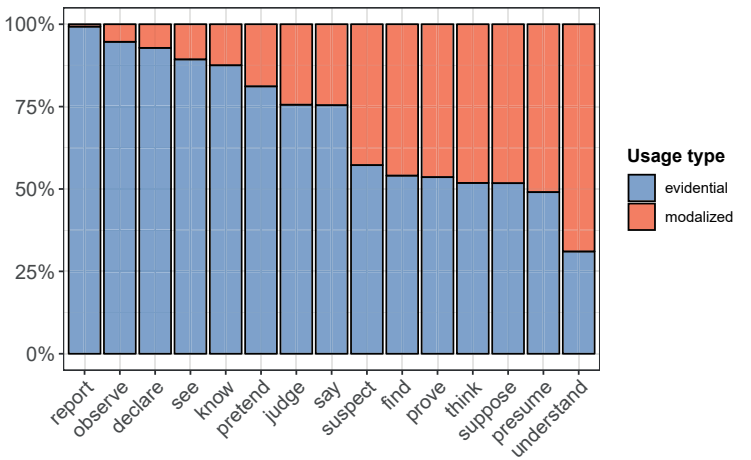

Fig. 7.8: Aggregate usage patterns of the top 15 PCU verbs

Most PCU verbs tend toward evidential readings, another group nears a 50/50 distribution and one verb is preferred in modalized NCIs. These remarkable differences can in part be attributed to the primary semantic associations these verbs evoke. The verbs on the left convey a sense of certainty, authority or definiteness. When something is reported or declared, there is an official record of it. Seeing and observing imply that someone had first-hand access to the information and knowing signifies a level of confidence and certainty on the part of the speaker that is not present in some of the other cognitive verbs (e.g. *suspect*, *think*, *suppose*, *presume*, *understand*).

The position of *prove* and *find* might seem odd from this perspective, as they also refer to some sort of visible result that would seem most naturally compatible with the evidential NCI. A closer look at the instantiated sentences reveals that modalized *prove*- and *find*-NCIs commonly co-occur with modals that underscore certainty on the part of the speaker. Thus, *prove* is often used in conjunction with *can* (30) in negative contexts and *find* with *will* (31).

(30) *These things, I am persuaded,* ***can never be proved to have been*** *consistent with the Publick Good of these Nations:*
(0532200900, Benjamin Hoadly, 1706)

(31) *Keep alive this principle, (which whether any will heare, or whether any will forbeare, I know not; but this I am sure of, in the latter end it* ***will be found to be*** *true:)*
(a90269.a0, John Owen, 1656)

What most studies ignore is that such aggregate distributions may in fact emerge from qualitatively different patterns of individual usage, as pointed out by Nevalainen et al. (2011). In one scenario, individual usage of competing variants centers around the population mean (centralized pattern). In another scenario, the aggregate distribution does not resemble individual usage, but arises from averaging over extreme individual values (polarized pattern). While Nevalainen et al. (2011) note that the former scenario is more common if abstract syntactic constructions are involved, the possibility that aggregate data obliterate considerable degrees of individual variation cannot be eliminated.

To offset this issue, I inspect which scenarios are involved in the variable semantic distributions of the top 15 PCU verbs. The results of this undertaking are visualized in Figure 7.9, where individual data points represent authors' personal distributions (measured as the percentage of evidential uses) and boxes summarize the distribution and median values per PCU verb. To minimize the risk of including deceiving values resulting from an extremely low number of instances in individual usage, I determined a threshold of minimally four occurrences per verb per author for the data point to be included in the analysis. The verbs are given in the same order as Figure 7.8.

Interspeaker variability in usage type preferences is found to be highly dependent on the instantiated matrix verb, indicating that different constellations of individual behavior give rise to a variety of communal patterns. The verbs *report* and *observe* yield the lowest amount of individual variation, as evidenced by the flat boxes and the fact that individual data points assemble around the same level, with two remarkable outliers for *observe*. The most extreme outlier is Colley Cibber (ID 501), with three modalized NCIs of the type [*may be observed to* V] out of a total of five NCIs with *observe*. Other items on the left also have speakers whose use is categorical, or at least heavily skewed toward the expression of evidentiality. As we move to the right, the boxes grow taller and the whiskers longer, reflecting not only a more variable use at the community level but also a greater degree of interspeaker variability. Concentrating on the individual data points in *say* and the verbs to the right of *say*, one finds that neither of the two scenarios described above uniformly applies; rather than a centered or polarized pattern, the variability

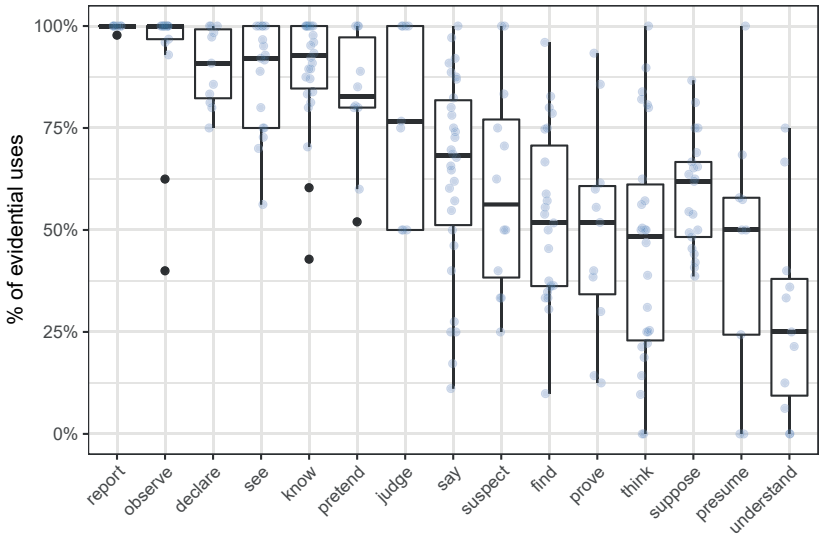

Fig. 7.9: Individual variability in usage patterns of the top 15 PCU verbs

typically represents a mix of both, with some categorical and many in-between speakers. It follows that many of the top NCI patterns allow for a good deal of interspeaker variability in terms of communicative intent. Being exposed to such variability at the community level, speakers are not consistently pushed in a single direction and may, as a result of this uncertainty, entrench specific patterns that are licensed by the community but not representative of the average usage profile (cf. also Standing and Petré 2021). I will conclude this section with some illustrations of (changing) individual preferences, focusing on the *say*-NCI in Fuller, Jacob and Salmon.

7.5.3.2 The *say*-NCI: Some illustrations

7.5.3.2.1 The *say*-NCI in Fuller (ID 104)

In Section 7.5.2, the rise of the evidential NCI was situated in generations 1 to 3, after which a period of relative stability set in. At the individual level, the most pronounced lifespan changes toward a higher proportion of evidential uses are found in the earliest-born generation. Two first-generation authors, Fuller (ID 104) and Taylor (ID 106), exhibit a marked preference for the evidential use initially (at ca. 75%) but become less categorical over time; in Fuller's case the decrease is gradual and consistent in direction, i.e. monotonic, while Taylor's development is more V-shaped. A closer inspection of Fuller and Taylor's data reveals that

Fuller's longitudinal distribution, first presented in Figure 7.6 (first row, panel 2) and repeated here as the left-hand panel in Figure 7.10, conflates two different developments, as displayed by the middle and right-hand panels.

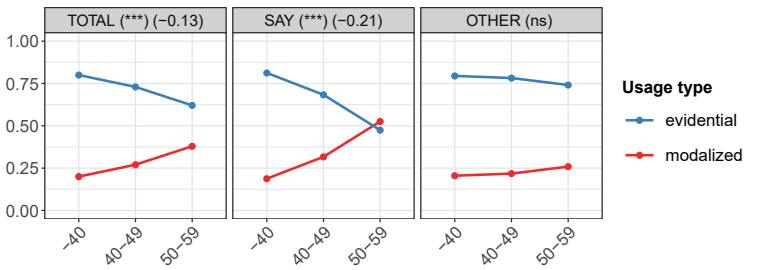

Fig. 7.10: Lifespan change in Fuller

The middle and right-hand panels show that the nature of the trend varies with the PCU verb used in the NCI construction. A consistent finding across all authors is that *say* is by far the most frequently attested PCU verb, accounting for 38% of all instances across the board (4,178/10,901). Separating the verb *say* from all the other attested verbs alters the picture of Fuller's diachronic development drastically, indicating that there is a strong negative linear trend in his evidential use of the NCI with *say* against the backdrop of stable usage of the NCI with other PCU verbs. This is confirmed by the Kendall test, which yields a statistically significant correlation between age and usage type for *say* (z = -4.09, $p < 0.001$, τ = -0.21), but not for the other verbs (z = -0.96, p = 0.34, τ = -0.05).

By contrast, in Milton, Owen and L'Estrange's writings, i.e. the three first-generation authors with a significant lifespan increase, the diachronic upward trend of evidential uses is found for both *say* and the group of other verbs when treated separately, indicating that the evidential NCI is entrenched as a schema with *say* as the prototypical reportative verb. For Taylor, too, the V-shaped development is manifested in *say*- and other NCIs alike. Interestingly, Fuller's use of PCU verbs excluding *say* is already relatively categorical in his early career and remains so throughout his lifetime, with the proportions of roughly 75% to 25% for evidential/modalized uses mirroring the endpoint of the developments of the first-generation 'increasers', and more generally the level at which the proportion of evidential/modalized uses stabilizes at the aggregate level (see Figure 7.5).

Fuller appears to have developed an idiosyncratic use of the *say*-NCI, increasingly favoring its modalized use, which can be used as an argumentative device.

In fact, 89% of Fuller's modalized uses with *say* are of the type [*may be said to* V], as in the following example.

(32) *THe World is a volumne of Gods works, which all good people ought studiously to peruse. Three sorts of men are too blame herein. First such as observe nothing at all; seeing, but neither marking nor minding the daily accidents that happen, with Gallio the secure deputie of Achaia, They care for none of these things. Secondly, Such as observe nothing observable. These* ***may be said to weed*** *the world;* […] *Lastly, Such who make good observations, but no applications.*
(99862561, Thomas Fuller, 1649)

In (32), the NCI serves not to provide evidence of shared responsibility for the statement that people who observe nothing observable weed the world. Rather, while such modalized utterances (especially with *may* and *can*) may appear to characterize or describe the proposition as a possibility, the speaker is here using this device to present his attitudes or views in a tentative manner.

7.5.3.2.2 The generic *say*-NCI in Jacob (ID 508) and Salmon (ID 313)

In Section 7.3, I argued that the basic function of the evidential NCI is to express that there is an external source for the proposition. There are various ways in which such NCIs can be modified (e.g. by agent phrases and adverbials), often with the intent to add more information (e.g. specify the source) or to set the boundaries for which the assertion holds. This commonly adds a level of specificity to the statement, but the opposite can also be true. Highly generic NCIs are found in conditional contexts (e.g. following *if*-, *when*- and *where*-clauses), as in (33).

(33) *Also if Persons who have Authority from the King to coin Money make it of greater Alloy, or less Weight than they ought, it* ***is said to be*** *Treason.*
(0173000800, Giles Jacob, 1744)

It is clear that an utterance such as (33) does not evoke the prototypical hearsay reading associated with the evidential NCI. This is probably also the reason why Goossens (1991) and Noël and Colleman (2010: 178, fn. 2) appear to group such examples with modalized NCIs such as [*can/may be said to* V]. It is also their only argument for claiming that the 'descriptive' NCI need not be modalized. In my opinion, the discriminating factor is reference to the Source, distinguishing between the Other (evidential NCI) and the Self (modalized NCI). Generic NCIs might not refer to a specific evidence base, but they do attribute the information entailed in the proposition to a Source that is not the Self. The difference in meaning

is clear when *is said to be Treason* in (33) is replaced by a modalized NCI, e.g. *may/must be said to be Treason*, which yields an entirely different interpretation of the clause.[22]

Generic NCIs appear to present a conditioned statement as being uncontroversial ('everyone agrees/says that'), which could be presented schematically as [*if* X, *then* [Y = Z]$_p$]. The following example suggests that the difference between such generic NCIs (*is said to be Murder*) and a regular declarative statement with *be* (*'tis Manslaughter*) is indeed quite small.

(34) *Where a Person shooting at the tame Fowl of another, which is an unlawful Act, kills a Stander-by, it* ***is said to be*** *Murder in such Person. If he shoot at wild Fowl, Hare, etc. and be not qualified to keep a Gun, or kill Game, and kills any Person, 'tis Manslaughter.*
(0173000800, Giles Jacob, 1744)

While not representing the prototypical hearsay reading of the evidential NCI, generic NCIs are found in all types of writings and therefore conventionalized in the community at large. In the work of Giles Jacob (ID 508) and William Salmon (ID 313), however, the use of generic, objectifying NCIs is particularly notable, presumably because their legal and medical professions are quite conducive to this type of rhetorical device. This shows that speakers may recognize and exploit the potential of particular uses of a construction that are licensed by the community but not particularly representative of the construction per se, especially if—as in the case of the *say*-NCI—interspeaker variability is great. If speakers continue to use such lower-level patterns, they may crystallize as separate mini-schemas; in comparison with other speakers, such patterns may then be recognized as prominent features of those authors' personal styles (see, for instance, Neels (2020) on the growing entrenchment of *let alone* in William Faulkner).

22 If one were to follow Goossens (1991) and Noël and Colleman (2010) in distinguishing examples such as (33) from evidential NCIs, then one can easily run into problems when encountering examples such as (i), which appear to allow both readings.

(i) *And it is said to be Mortal, if vehement and deadly Symptoms do follow upon it; as Convulsions, with frequent Fainting and Swooning, Gangren and Sphacelus.*
(12257952, William Salmon, 1697)

7.6 Conclusion

Taking up the case of the NCI, the present chapter set out to shed new light on the nature of constructional change in individuals. While usage-based theory predicts that speakers continue to adapt and reorganize linguistic knowledge past adolescence, little is known about the scope and limits of lifespan change involving syntactic constructions. The rich semantic-pragmatic functionality of the NCI offers a unique testing ground for examining the more qualitative aspects of constructional change. In the first part of the discussion (Section 7.3), I presented a critical analysis of the three NCI constructions proposed by Noël (2008). While adopting most aspects of Noël's classification, I also argued that there are two rather than three basic usage types, which I refer to as the modalized and evidential NCI. These usage types share the underlying function of epistemic qualification, but differ in marking the source for the proposition as either internal (Source = Self) or external (Source = Other). The decision to reject the distinction between explicit and plain evidentials is supported by the empirical analysis presented in Section 7.4.

In Section 7.5, I discussed patterns of variation and change in the development of the NCI, with particular emphasis on the NCI's semantics and on individual trajectories in change. The data display a distributional shift in the use of evidential and modalized NCIs. In generations 1 to 3, we observe a steady increase in the proportion of evidential uses until a level is reached that is not further advanced by subsequent generations. Retaining a proportion of approximately 0.30, the modalized NCI remains in use as a minority pattern of the NCI. Due to its functional niche, the modalized NCI is not at risk of being eradicated or completely replaced by the evidential NCI. The intergenerational development is mirrored in the longitudinal trajectories of several informants, especially in the first generation. An important outcome of the study then is that individuals are capable of change beyond adolescence. Most of the observed lifespan changes are in accordance with the community trend. I have argued that the cross-individual propagation of the evidential use and decline of the modalized use reflects the NCI's increasing entrenchment as a reportative evidential and its growing emancipation from the passive construction. The semasiological shift that happens during the lifetime of several individuals is one of specialization (semantic narrowing) toward the evidential use. Some lifespan changes that run counter to the community trend reflect idiosyncratic developments that may arise from self-feeding cycles of entrenchment involving lexically specified patterns. For instance, two separate trends were discerned in Fuller's longitudinal data: while his use of the NCI (all verbs except *say*) is already fairly categorical at the beginning of his career and remains stable over time (with a strong predominance of the evidential NCI), his use of the *say*-NCI specializes

towards the hedging function of the modalized NCI. Variationist studies often rely on binary distinctions (stability vs. change) to describe various constellations of change in the individual and the community, the resulting synchronic patterns being "flat" or showing a "monotonic slope with age" (e.g. Labov 1994: 83 and variations on this scheme in Sankoff (2005: 1004) and Wagner (2012: 373); see the discussion Section 2.4.2.2). This matrix is elegant and appropriate for a number of changes, but fails to capture the full range of possibilities from a truly longitudinal perspective (compared to the measurement of two points in time). The reality of change in progress, especially of changes beyond those that can be characterized as replacement changes, is often more messy.

On more general terms, the present study has highlighted the importance of research on individual variation and change. While the empirical analysis revealed non-random patterns in that several individuals exhibited monotonic trends of semasiological change in the NCI construction in line with the generational increase observed in the earliest-born generations, it also showed that language usage may vary considerably during individuals' lifetimes, often in unpredictable ways. The variation attested in this study, exemplified also by cases such as Fuller's idiosyncratic development, indicates that language change, like synchronic grammatical competence, is an abstraction that may describe collective behavior, but often fails to account for the linguistic choices individual speakers make.

8 Networks in adult cognition

8.1 Introduction

The present chapter is an investigation into the network architecture of linguistic knowledge that is a central feature of many cognitive theories of grammar, including cognitive construction grammar (e.g. Goldberg 1995, 2006a; Croft 2001; Langacker 2008a; Traugott and Trousdale 2013; Diessel 2019). As laid down in Chapter 2, usage-based constructionist research generally assumes that grammatical items are modeled as schematic nodes in a hierarchical and dynamic associative network, which implies that (a) lower-level constructions inherit properties from higher-level constructions and that (b) constructions and the links between them are subject to change, in terms of formal and semantic make-up, but also in terms of frequency. If nodes or constructions in the network change, this may affect neighboring constructions. While this kind of analogical change has been attested at the community level (e.g. Fischer 2008), few attempts have been made to study individuals' behavior in this respect.

Like more traditional studies of change, diachronic construction grammar has mainly treated changes in the language network as a macro-level phenomenon. Some research does explicitly draw the connection to individual speakers. Trousdale (2015), for instance, briefly touches upon the issue, arguing that novel constructions emerge as temporary nodes in the language network of individual speakers, which may become entrenched in the idiolects of these speakers and may subsequently become conventionalized in a speech community, provided a critical number of speakers adopts them. Yet, in spite of construction grammar's general 'cognitive commitment', diachronic construction grammar in particular has not shown much interest in making any claims about the psychological reality of the constructions described, and some have wavered whether this should be a priority to begin with, considering the many practical difficulties involved (see Hilpert 2018).

Facing this challenge, I show in this chapter how we can exploit the possibilities that historical corpora have to offer in order to gain insight into the nature of linguistic dependencies (constructional taxonomies) in individual authors. The aim is twofold. First, I wish to establish whether constructions that linguists perceive as being hierarchically related in a constructional network are systematically linked in individuals. The premise is that the relationship can only be cognitively real if this is supported by behavioral data. The analyses in this chapter therefore concentrate on a comparison of usage patterns in individual-level data, taking up

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the case of the special passives.[1] Second, if two constructions (such as the special passives) are found to be cognitively related, to what extent do they mutually influence each other? Do they coevolve? Do changes in one construction prime changes in the other? A comparison of longitudinal trends at the individual and community level is expected to shed light on these questions.

In sum, this chapter aims to advance our understanding of constructional taxonomies. It is structured as follows. Section 8.2 introduces the data set and methods used to examine to what extent the special passives are associated in individual language use. The next two sections elaborate on the results of the various analyses. In the first part of the analysis, I show that usage patterns of the special passives exhibit considerable interindividual variation, but are remarkably similar in individual usage (Section 8.3). While the evidence for a persistent association in individual usage is compelling, some trends indicate that the constructional bond between the two types of passives is loosened during the period of investigation (Section 8.4). Further analysis, presented in Section 8.5, connects this increasing dissociation to a number of construction-specific developments that reflect the outcome of a subtle interaction between entrenchment processes and constructional semantics.

8.2 Data and methodology

The results presented in this chapter draw on the same data sets used in Chapters 6 and 7. The reader is referred to these chapters (in particular Sections 6.2 and 7.2) for an overview of the query and annotation procedures. Some necessary adjustments were made, however, to ensure comparability across the two case studies.

Recall that for reasons of feasibility not all material available in the EMMA corpus was analyzed (see Section 5.4). Specifically, I created a text-based sample for the case study on the prepositional passives (dubbed the EM corpus) and an author-based sample for the case study on the NCI (30 out of 50 authors). The data set for the prepositional passive contains material for all 50 authors based on a principled selection of the available texts in EMMA; the NCI sample retains all available writings per author, but limits the number of authors to six authors per generation (30 authors in total). Both samples may be used to examine aspects of lifespan change (i) and the dynamic relation of unique and shared knowledge

1 Note that terms like 'correlation', 'persistent association' and 'dissociation' are used in this chapter to describe the quantitative results of the studies. These results may be taken to *indicate* a (dis)connection in speakers' minds, but they are never claimed to be neurological proof of it. For the advantages and disadvantages of corpus-based methods, see Section 2.3.2.

(ii), yet each sample is particularly suited to address one of these areas: the data selected for the NCI case study has the most fine-grained longitudinal resolution and has therefore been used to elaborate on questions of lifespan change; the data set for the prepositional passive incorporates the entire EMMA network and has been particularly useful to study the interaction between individual- and community-level change.

For a direct comparison of the two case studies beyond normalized measures, the analysis must be restricted to a sample of the annotated data, applying both the text-based selection procedure (EM annotations only) and the author-based one. In the case of the prepositional passive, this means that data for 20 authors are discarded. For the NCI, it was necessary to transform the data so as to include only those attestations that occur in the EM corpus.[2] This yields the reduced data sets provided in Tables 8.1 and 8.2. Table 8.3 furthermore lists the original and reduced word counts. Unless mentioned otherwise, the results presented in this chapter are reduced to the attestations found for 30 authors in the EM corpus.

Tab. 8.1: Attestations of the NCI

	Corpus	Authors (n)	Attestations (n)
Original data set	EMMA	30	10,901
Reduced data set	EM	30	2,602

Tab. 8.2: Attestations of the prepositional passive

	Corpus	Authors (n)	Attestations (n)
Original data set	EM	50	5,701
Reduced data set	EM	30	3,556

Drawing on the data sets just described, the remainder of this chapter examines individuals' usage of linguistically related constructions against the backdrop of general community-level trends. The ultimate aim is to gain a deeper understanding of the workings of constructional taxonomies that is both empirically and

2 This was done by comparing the attestations' hit IDs in EMMA with the respective texts in EM, primarily because some EMMA documents *are* included in EM but were partly dummified to retain only the specified parts.

Tab. 8.3: Overview of text samples

Corpus	Authors (n)	Word count
EMMA	50	87,126,198
EMMA	30	39,529,281
EM	50	17,307,907
EM	30	10,199,950

psychologically informed. The latter entails that we must look beyond linguistic generalizations as evidenced in pooled corpus data, and see to what extent they are manifested in individual speakers. The existence of associative network connections between two or multiple constructions in cognition postulates that there will be traces of this dependency in actual usage by the individual in question. The present chapter therefore explores the sociocognitive dimension of linguistic generalizations and dependencies as indexed by *usage* (see also Diessel 2019; for a discussion of the advantages and limitations of a corpus-based approach, see Chapter 2, in particular Section 2.3.2).

The examination of usage patterns covers various properties of the special passives, which may be briefly introduced here. The first set of measures is concerned with the constructions' general use, most notably their relative frequencies and spread (i.e. dispersion/burstiness). The second set of measures compares the two construction types with regard to their shared constructional slots, covering properties relating to the subject and the passivized matrix verb (e.g. length, complexity, type frequencies). By calibrating the results along the dimensions of time and lifespan on the one hand, and community and individual on the other, the synchronic and diachronic interplay of the macro- and micro-level can be investigated in a more explicit way than most corpus-based and experimental research to date has been able to do.

8.3 Patterns of association

This section reports on several analyses that shed light on the nature of the linguistically assumed associative connection between the NCI and the prepositional passive. From a constructionist point of view, we may conceive of the NCI and the prepositional passive as two different constructions (linguistic generalizations) that are connected to each other by means of the higher-order passive schema, by virtue of which they share a number of traits. Their status as subschemas or 'mesoconstructions', i.e. "sets of similarly-behaving specific constructions" (Traugott

2008a: 236; see also Traugott 2008b; Trousdale 2008), is evident not only from their particular form but also from specific semantic constraints on the slot fillers. The linguistic generalization is captured in Figure 8.1. The links connecting the special passives to the passive construction are "instance links": they indicate that the NCI and prepositional passives are "special case[s]" or "more fully specified version[s]" of the passive construction (Goldberg 1995: 79).

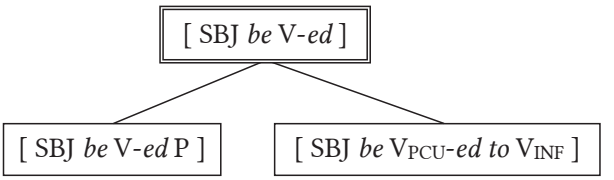

Fig. 8.1: Partial taxonomy of passive constructions

The network association or local tree presented here is naturally only a part of the taxonomy of passives: several other meso- or micro-constructions can be thought of (e.g. the recipient passive, the *get*-passive, or lexically specified chunks). Also, Figure 8.1 should not be taken to suggest that the most abstract passive generalization (the top level) arose as a schematization over these meso-constructions. Rather, the diachronic analysis presented in Chapters 3 and 4 indicates that the special passives represent innovative extensions of the regular passive with particular formal and semantic constraints. What started out as occasional instantiations of these particular form-function combinations (possibly even lexically specified micro-constructions)[3] subsequently became established as construction types in their own right, leading to the assumed generalization captured in Figure 8.1.

Is there any evidence in the usage patterns of individual authors that this linguistic generalization reflects a psychological reality? Sections 8.3.1 and 8.3.2 build on evidence from frequency and dispersion correlations to suggest that this is indeed the case.

8.3.1 Frequency correlations

A first indication of a cognitive link between the two construction types comes from scrutinizing inter- and intraindividual frequency distributions. The extent of

3 See e.g. the account of lexical diffusion suggested by Denison (1981, 1985, 1993) for the spread of the prepositional passive.

interindividual correlation is modeled by the linear regression plotted in Figure 8.2, the results of which are given in Table 8.4. As this is done on the basis of normalized frequencies, I could use the more extensive EMMA data for NCI authors (rather than the reduced EM sample), achieving more robust overall frequencies. The same holds for the longitudinal data presented in Figure 8.3.

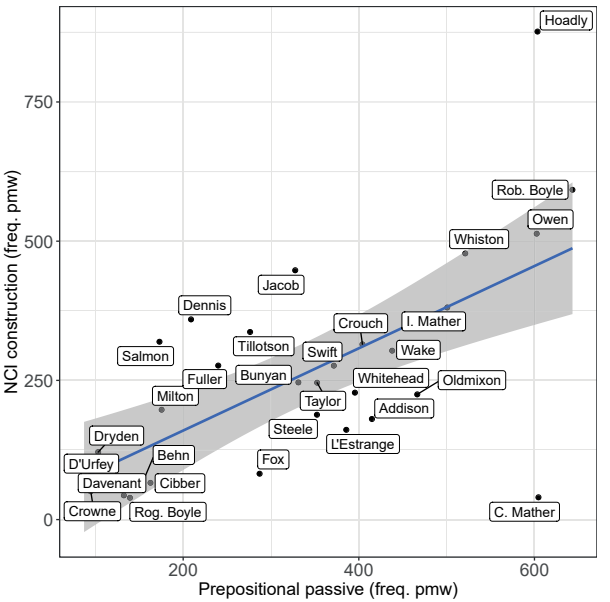

Fig. 8.2: Correlation of special passive usage (reprinted from Petré and Anthonissen 2020: 199, Fig. 3)

Tab. 8.4: NORM. FREQ. NCI ~ NORM. FREQ. PPP

	Estimate	SE	*t*-value	*p*-value
(Intercept)	12.18	60.68	0.20	0.84
PPP	0.74	0.16	4.51	<0.001 (***)
Overall fit	R^2=0.42; Adj. R^2=0.40; p<0.001			

Figure 8.2 maps the normalized frequency of the nominative and infinitive on the *y*-axis, and the normalized frequency of the prepositional passive on the *x*-axis, where the data points represent the coordinates of individual authors along these

two dimensions. Pearson's correlation coefficient indicates that there is a moderate to strong positive relationship between the two variables ($r = 0.65$, $p < 0.001$). In general, then, authors who use the NCI frequently will also use the prepositional passive frequently, and vice versa, that is, if you know the relative frequency of one construction, you can predict the value of the other. A fairly consistent trend is that most authors use the prepositional passive slightly more frequently than the NCI construction, as can be inferred from the slope of the regression line and the *x*- and *y*-coordinates. Turning to individual authors in more detail, several observations may be made. In Salmon, Dennis and Jacob, the NCI is slightly more prevalent. Hoadly and Cotton Mather are two clear outliers. While both authors are among the top adopters of the prepositional passive, they are at the extreme ends when it comes to their use of the NCI construction.

We can furthermore observe a genre-related effect in that narrative authors use the special passives consistently less frequently than their contemporaries producing religious sermons and treatises. Milton also finds himself at the lower end of the spectrum, though slightly above the other narrative authors. As noted earlier, Milton's drama and masques represent a smaller part of his oeuvre compared with the contemporary playwrights, which explains his position in the graph (see Section 5.2.2.2, fn. 1).

Robert Boyle, it appears, was not only a pioneer of modern chemistry, but also of the use of special passives. Boyle's ardent use of these grammaticalizing passives attests to his reputation as an innovative writer, who, among other things, made a vital and lasting contribution to the development of specialized vocabulary (Gotti 1996: Ch. 3; Gotti 2003: Ch. 8), adding no less than 446 neologisms to the English language (Moessner 2012: 709).[4] There are plenty of other signs of Boyle's metalinguistic awareness. For example, Boyle advocated a concise, precise and plain style in so-called experimental essays (Gotti 2001; Lareo and Montoya Reyes 2007), for which text type he is credited as its "conscious inventor" (Paradis 1987: 85). It has furthermore been argued that Boyle carefully crafted an authorial identity, which involved "using the resources shared by the discourse community, but exploiting them in an individual way" (Moessner 2013: 33). His distinctive writing style is considered to be a manifestation of that.

It is safe to conclude from Figure 8.2 that while there is substantial variation in usage intensity between authors, special passive usage within authors is strongly correlated. Some coarser-grained patterns reveal that part of the interindividual variation is socially stratified, i.e. deriving to a certain extent from speakers' social

4 Hunter (2015: 15) points out that this was not received favorably by all of this contemporaries, citing a passage in which Boyle is being ridiculed for some new-coined words.

memberships and professional practice. The case of Robert Boyle furthermore suggests that a person's personality could also affect the willingness with which linguistic innovations are adopted.

The data presented thus far represented the authors' averaged frequencies over a long career. To examine whether these effects are persistent over the lifespan, I tracked the normalized frequencies of the special passives during the lifetimes of EMMA authors. The results are visualized in Figure 8.3.

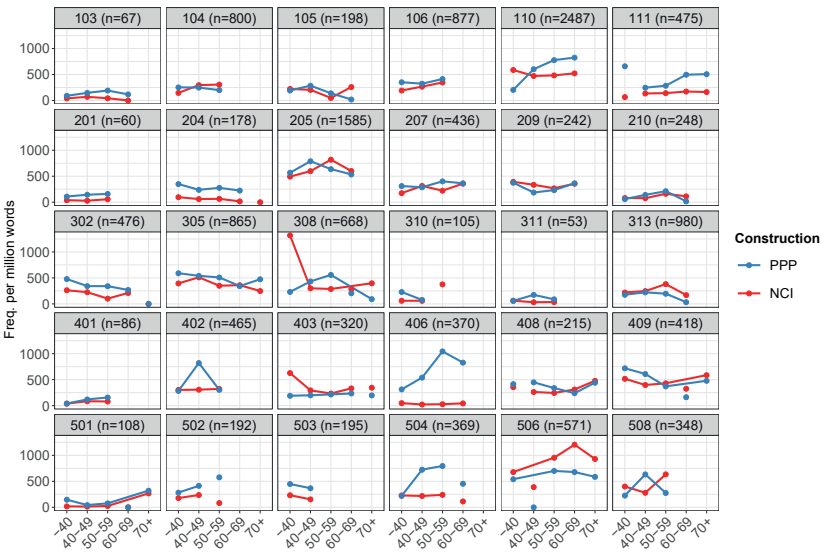

Fig. 8.3: Lifespan development of special passives

Overall, the longitudinal data corroborate and deepen the findings for the averaged frequencies presented in Figure 8.2. Variation in usage intensity is apparent when authors are compared with each other, but frequency developments during individual speakers' lifetimes are largely harmonized. Most authors exhibit such 'in-sync' developments to a stronger or lesser degree, including Davenant (ID 103), Milton (ID 105), Taylor (ID 106), Roger Boyle (ID 201), Fox (ID 204), Robert Boyle (ID 205), Bunyan (ID 207), Tillotson (ID 209), Dryden (ID 210), Whitehead (ID 302), Increase Mather (ID 305), Crowne (ID 311), Salmon (ID 313), D'Urfey (ID 401), Dennis (ID 403; with the exception of the first stage), Swift (ID 408), Whiston (ID 409), Cibber (ID 501) and Addison (ID 503). While for some the data are fairly sparse and must thus be interpreted with caution (e.g. IDs 103, 311, 503), the sheer number of authors for which patterns of persistent association can be observed suggests that the effect is

real. Hoadly's (ID 506) use of the special passives also exhibits similar trends, but unlike most authors he uses the NCI more often than the prepositional passive. As with other observations of individual behavior, some patterns fluctuate, making them less straightforward to interpret. Wake (ID 402) and Jacob (ID 508), for example, both show a rise-and-fall pattern in their usage of the prepositional passive that is different from the development of the NCI construction. At the same time, their usage frequencies do not appear to be completely unrelated either. During some stages in Wake's and Jacob's careers, the special passives do remain within a certain frequency range, suggesting they may still be weakly correlated.

Next to the large group of authors whose use of the special passives appears to be correlated (i.e. show signs of a 'persistent association') to a stronger or lesser degree, there are a handful of authors who represent a diverging yet recurrent trend. These include two first-generation authors (Owen (ID 110), L'Estrange (ID 111)) as well as two authors from the fourth and fifth generations (Cotton Mather (ID 406), Oldmixon (ID 504)). The pattern found in these authors is one of a rather extreme increase in the use of the prepositional passive with age against stable usage of the NCI, that is, frequencies of the two construction types are fairly comparable in the earliest stage of the authors' careers, but increasingly diverge over time. These patterns of dissociation will be discussed in more depth in Section 8.4, where I will show that this effect is present not only in particular individuals, but also emerges at the community level. Further analysis in Section 8.5, drawing on constructional semantics and the effect of entrenchment processes on network associations, will provide some explanations as to why the two construction types might become dissociated in the minds of some speakers and in the community more generally.

One pane still requires some attention. Across all individuals, the longitudinal dissection of Nathaniel Crouch's (ID 308) data reveals the most arbitrary pattern. Not only are there substantial non-monotonic shifts over time, the development of the two special passive constructions shows no signs of a persistent association nor of any other potentially interesting trend (e.g. a dissociation of the two constructions with age, cf. infra). In this sense, Crouch is a clear outlier. Biographical information sheds some light on Crouch's seemingly haphazard use of the special passives. As suggested in Chapter 6, the lack of systematicity in Crouch's usage frequencies might be related to his reputation as "hack writer" (Mayer 1994: 395). Consider the following quotes about Crouch and one of his contemporaries.

> Nathaniel Crouch's histories then were a necessary corrective or via media between patchwork antiquarianism and largely plagiarized histories of Heywood. In fact, by distilling the historical narrative of Britain for a wider audience, Crouch's works were forerunners to later narrative histories which were to draw on the substantive content of the sixteenth-century chronicles, repackaged in more pleasing language, with an admixture of authorial reflection and original argument. (Vandrei 2018: 67)

> William Winstanley's *The Loyall Martyrology* (1661), was a potboiler, and proved but the beginning of a long career of compiling, abridging and outright plagiarism that might have embarrassed even Nathaniel Crouch. (Woolf 1997: 228)

Woolf's description of Winstanley's *The Loyall Martyrology* implies that Crouch was some kind of textbook example of plagiarism. Vandrei, in her altogether more nuanced view of Crouch's work, underscores the added value of the way Crouch repackaged histories to appeal to a larger audience. Still, we may assume that if a good deal of what Crouch published was in some form compiled, adjusted or even directly copied from existing work, this would have skewed the distribution of many linguistic features in unpredictable ways. Crouch therefore represents an interesting control case: if Crouch's work showed similar signs of constructional association, this would be alarming and could signal that the trends found in other authors are on shaky grounds. This, however, is not the case: Crouch's deviant and unpredictable behavior is much in line with what one would expect of a badly sampled or unrepresentative corpus, and, crucially, has been observed in other *Mind-Bending Grammars* case studies.[5]

Crouch's case aside, the EMMA authors appear to fall into two main groups. In the smaller group of authors (4/30), the special passives drift apart over time ('dissociation'); in the remaining group of authors (25/30), the special passives follow similar trends across the lifespan or exhibit at least rather similar usage frequencies at particular stages in life ('persistent association'). The second scenario suggests that the variation between authors is greater than the variation within authors, or put differently, that observations of a given individual are strongly associated. Such intraindividual clustering would be expected to be much weaker in the dissociation scenario. To evaluate these claims statistically, I fitted two linear mixed-effects models (LMMs), one for the scenario of persistent association (25 authors), and one for the dissociation scenario (4 authors), see Tables 8.5 (a) and (b) respectively. Crouch, as a clear outlier, was not included in either model. In each model, the observed normalized frequencies represent the dependent variable

5 Standing and Petré (2021), for instance, show that changes in Crouch's cleft usage are opposite to the generational change. Petré and Van de Velde (2018), in their study on the grammaticalization of *be going to*, tracked authors' grammaticalization scores over the lifespan and computed slope coefficients as indicators of lifespan change. Crouch came out as the author with the steepest slope (i.e. the highest amount of lifespan change), yet the increase in grammaticalization was not significant, whereas for some authors with more moderate slopes it was. This could be due to data sparsity, but it could also be the case that the increase in grammaticalization was not significant because the data points did not follow a linear trend, but showed fluctuation (as in the case of the special passives). If the slope does indeed reveal fluctuating use, this could well be related to the issue of plagiarism.

(NORM. FREQ.), that is, each point plotted in Figure 8.3[6] represents one observation or data point, whereby each measurement is treated as a measurement of the *passive* construction. It is therefore important to make abstraction from the subplot, lines and color coding in Figure 8.3; these visual aspects (representing age, construction type and author) basically show how variation in normalized frequency is structured along various dimensions, the effects of which are now being measured by the mixed model. Age range (AGE), construction type (TYPE, i.e. NCI or prepositional passive) and their interaction are included as independent or explanatory variables (fixed effects). The random intercept for author is specified with (1|AUTHOR). An overview of the regression estimates can be found in Table 8.5.

Mixed-effects models are widely used because the inclusion of random effects allows you to control for non-independence in the data. Common examples of non-independence include hierarchical or nested structures (e.g. students within classes within schools, patients within doctors) or longitudinal data (repeated measures from the same individual are likely to be correlated). The data presented here are of the second kind. By adding individuals or multilevel structures as random variables, the 'noise' they create is quantified, leading to a better understanding of the main variables of interest (the fixed effects or explanatory variables). For instance, in psycholinguistic experiments, "participants are treated as random variables, because the interest of most studies is not about experimental effects present only in the individuals who participated in the experiment, but rather in effects present in language users everywhere, either within the language studied, or human language users in general" (Baayen et al. 2008: 390). This is how mixed-effects models in linguistic research are typically used. Rather than treating these effects as noise, however, I exploit them in this chapter as a method to gain insight into inter- and intraindividual variation. In what follows, I describe how I applied this to the case of the special passives.

Three variance-related components can be derived from the LMMs presented in Table 8.5 that are relevant to the case study at hand: marginal R^2, conditional R^2 and the intraclass correlation coefficient (ICC).[7] Marginal and conditional R^2 reveal information about the fit: marginal R^2 indicates how much of the model variance is explained by the fixed effects only (i.e. the explanatory variables AGE, TYPE and their interaction) and conditional R^2 how much of the model variance is accounted

6 Unconnected data points are not included.

7 The models were fit using the package `lme4` developed by Bates et al. (2015). The function `get_variance` from the `insight` package (Lüdecke et al. 2019) was used to extract the variance components from the two models. These were then used to compute the intraclass correlation coefficient and model diagnostics (marginal and conditional R^2) following Nakagawa and Schielzeth (2013) and Fransen and Roelant (2018).

Tab. 8.5: LMMs: NORM. FREQ. ~ TYPE × AGE + (1|AUTHOR)

(a) Persistent association (25 authors)

Random effects		**Var**	**SD**
author (Intercept)		29,624	172.1
Residual		12,459	111.6
Fixed effects	**Estimate**	**SE**	***t*-value**
(Intercept)	246.36	41.31	5.96
type = PPP	50.12	32.22	1.56
age = 40–49	-3.76	32.30	-0.12
age = 50–59	25.28	33.24	0.76
age = 60–69	48.80	39.52	1.24
age = 70+	118.39	57.78	2.05
type = PPP : age = 40–49	51.70	45.57	1.14
type = PPP : age = 50–59	-36.02	46.59	-0.77
type = PPP : age = 60–69	-116.13	54.36	-2.14
type = PPP : age = 70+	-92.04	77.60	-1.19
Overall fit	Marg. R^2=0.03; Cond. R^2=0.71		
	ICC=0.70		

(b) Dissociation (4 authors)

Random effects		**Var**	**SD**
author (Intercept)		19,746	140.5
Residual		29,983	173.2
Fixed effects	**Estimate**	**SE**	***t*-value**
(Intercept)	235.37	123.60	1.90
type = PPP	-43.67	141.38	-0.31
age = 40–49	-24.46	133.55	-0.18
age = 50–59	-12.27	133.55	-0.09
age = 60–69	23.26	144.78	0.16
age = 70+	82.88	213.30	0.39
type = PPP : age = 40–49	355.80	187.03	1.90
type = PPP : age = 50–59	551.10	187.03	2.95
type = PPP : age = 60–69	515.06	199.94	2.58
type = PPP : age = 70+	375.57	282.76	1.33
Overall fit	Marg. R^2=0.50; Cond. R^2=0.70		
	ICC=0.40		

for by the complete model (i.e. fixed and random effects), in our case the model that accounts for individual differences between authors. In both scenarios ((a) persistent association and (b) dissociation), the inclusion of the random intercept for author leads to a much better performance, but the effect is clearly stronger in the first model (a), where marginal R^2 is extremely low. This suggests that special passive usage in single speakers is more strongly associated in the group of 25 authors (a) than in the 4 authors who appear to dissociate (b).

The intraclass correlation coefficient (ICC), which yields a value between 0 and 1, signals how strong this correlation is, i.e. how much variation in the response is accounted for by the random effects only or how strongly measurements from one group/cluster (in our case one author) resemble each other. Applied to the case of the special passives, the ICC represents the between-author variance in normalized frequencies divided by the between-author plus the within-author variance, fixed effects such as AGE and TYPE being 'controlled for'. As such, the ICC can be used as a composite measure for inter- and intraindividual variability.

The model yields an ICC of 0.70, which means—in linguistic terms—that 70% of the unexplained variability in special passive usage can be attributed to differences *between* authors. Controlling for this variability leads to a good fit (conditional R^2 = 0.71). Together, this can be seen as evidence that special passives usage across the lifespan is strongly correlated within individual authors. With an ICC of 0.40, the degree of intraindividual clustering is much weaker in the dissociation scenario, i.e. there is a good deal of variability *within* speakers. In conclusion, the descriptive statistics derived from the linear mixed-effects models confirm that for the majority of authors the use of special passives across the lifespan is strongly associated.

8.3.2 Dispersion

Further indications for a cognitive link between the special passives come from measures of dispersion. Recall that in linguistics, dispersion metrics are used to inspect how evenly a particular word or construction is distributed across corpus parts. In this study, dispersion is operationalized by means of the constructions' normalized deviation of proportions (DP_{norm}) in each author's corpus. Theoretical and methodological details can be found in Chapter 6 (Section 6.4.1.1), where this measure was used to investigate the dispersion of the prepositional passive. Suffice it to say here that the same procedure was followed to obtain DP_{norm} values for the distribution of the NCI construction in each author's corpus (in both cases, the EM corpus was used to ensure comparability). Dispersion scores range between 0 and 1, where values close to 0 approximate a perfectly even spread, and values close to 1 a maximally unequal distribution with clusters of concentrated use.

The relevance of dispersion to the present study lies in its connection to grammaticalization. Because highly grammaticalized forms are characterized by a low DP_{norm} or even spread and lexical forms by a high DP_{norm} or uneven spread (Gries 2008: 421; Hilpert 2017a: 62), an increase in evenness of spread has recently been used as a measure of grammaticalization (Petré and Van de Velde 2018). Usage patterns of grammatical forms thus differ from usage patterns of lexical forms, which presumably also reflects a difference in how they are stored in individual networks of linguistic knowledge (e.g. as generalizations or as lexically specific exemplars). If speakers have acquired the prepositional passive and the NCI as subschemas of the passive construction, the constructions' normalized *DP* values may be expected to correlate across individuals. This prediction is borne out, as Figure 8.4 and Table 8.6 show.

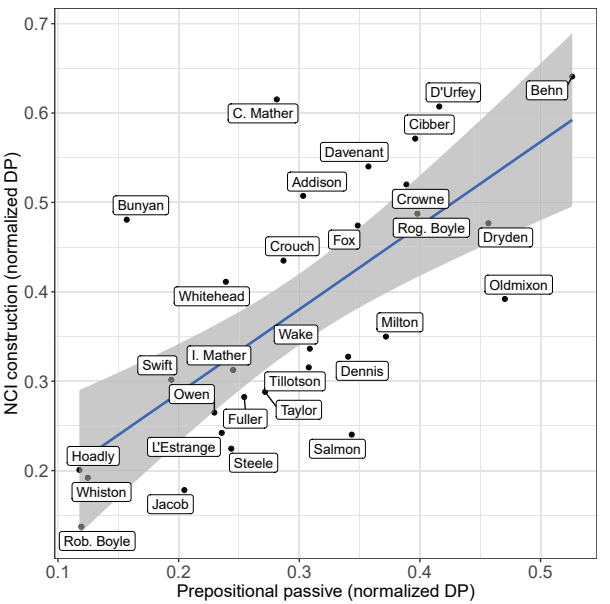

Fig. 8.4: Correlation of normalized DP values

The scatter in Figure 8.4 represents the normalized *DP* values of the NCI and prepositional passive in individual usage. Pearson's correlation coefficient indicates that there is a strong positive relationship between the dispersion of the NCI construction and the dispersion of the prepositional passive ($r = 0.68$, $p < 0.001$), which implies that authors who show a comparatively uneven spread of the NCI in their

Tab. 8.6: DP_{NORM} NCI ~ DP_{NORM} PPP

	Estimate	SE	*t*-value	*p*-value
(Intercept)	0.10	0.06	1.67	0.11
PPP	0.94	0.19	4.96	<0.001 (***)
Overall fit	R^2=0.47; Adj. R^2=0.45; p<0.001			

corpus (i.e. have a higher DP_{norm} value for the NCI) also tend to have a more clustered use of the prepositional passive. It is primarily narrative authors who show the highest DP_{norm} values, which means that the genre effect observed earlier is recurrent. Authors with a more evenly dispersed use of the NCI (i.e. low DP_{norm} values) show a similar trend for the prepositional passive; the special passives are an integral part of their linguistic repertoire and are used with regular intervals, as are other grammatical forms.

On the whole, the results of the regression analysis closely match the frequency correlation discussed in Section 8.3.1. Insofar as frequency and dispersion are collinear, they may be considered manifestations of the same psychological processes. Thus, a frequent construction that is evenly dispersed is likely to be a well-entrenched linguistic generalization, whereas an infrequent construction that appears in bursts is typically a lexical form or sequence that is stored and processed as a whole. While dispersion is primarily influenced by frequency (Hilpert and Correia Saavedra 2017), it also adds semantic generality to the equation. Evidently, frequency and semantic generality are partially interdependent: linguistic items or constructions with a broad semantic scope are more likely to be used than concepts with a concrete sense that only apply to specific domains. But not all linguistic elements within the same frequency range represent equally generic or specific notions. It follows that frequency and dispersion need not, but often do correlate. If they do not, that is, if two linguistic elements with roughly the same frequency differ substantially in their deviation of proportions, the effect is probably carried by their relative specificity (cf. Altmann et al. 2009).

The regression line reveals that, on average, the prepositional passive is more evenly spread than the NCI; this could be an effect of its higher frequency (3,556 *vs.* 2,602 attestations in EM30), its broader semantic scope, or both. In Section 8.4, I will zoom in on this difference from a diachronic angle, arguing that the two constructions start to diverge when the NCI nears its semantic carrying capacity (cf. Grieve et al. 2016) while the prepositional passive continues its growth curve.

8.3.3 Thoughts on coevolution

In answer to the first question formulated in the introduction to this chapter, the preceding sections have established that the special passives are systematically linked in individuals. Provided such an intimate connection could be demonstrated, the follow-up question was whether cognitively associated schemas coevolve in individual usage, that is, whether changes in the NCI trigger changes in the prepositional passive, and vice versa. In this section, I clarify the notion of coevolution and discuss whether the longitudinal data presented in Section 8.3.1 can be seen as manifestations of coevolution in adult cognition.

The concept of coevolution stems from research in ecology and evolutionary biology, where it is defined as "reciprocal evolutionary change between interacting species driven by natural selection. That is, each player in a coevolutionary relationship evolves in response to its interaction with the other player(s)" (Langerhans 2008: 644). A classical example of coevolution is the relationship between predator and prey, which exert selective pressures on each other: in order to survive, the prey must evolve to avoid predation and the predator in turn must adapt to secure sufficient food. But species may also coevolve for mutual benefit, as seen in the coevolution of flowering plants and the insects and birds that pollinate them. Linguists have long recognized that the mechanisms at work in biological evolution closely resemble the processes underlying language change (see Rosenbach 2008 for an overview), and have adopted concepts such as 'exaptation' (Lass 1990), 'homoplasy' (Lass 1997; Van de Velde and van der Horst 2013) and 'degeneracy' (Van de Velde 2014) from the field of evolutionary biology to describe particular phenomena of linguistic change. Some have envisaged a generalized theory of evolutionary change that applies to all replicator systems, including biological evolution, linguistic evolution and cultural change (e.g. Ritt 2004; Croft 2000).[8] Such theories, when applied to the study of language change, mainly differ with respect to the prominence they assign to social and cognitive processes in replication (see Zehentner 2019: 234–242 for a recent overview). In practice, the framework is usually applied to study population-level changes (see also Steels and Szathmáry 2018: 134), probably for the same practical reasons that make individual-level research difficult. Studies that have referred to the concept of coevolution are no exception in that respect.

In general, the concept of coevolution is not particularly widely used in linguistics. It is sometimes used in a broad, non-technical sense, as in Bybee et al.'s (1994: 20) hypothesis that "the development of grammatical material is character-

8 In addition to the study of language change, evolutionary theory has also informed research on the origins and development of the human language capacity.

ized by the dynamic coevolution of meaning and form". In particular, Bybee et al. (1994) set out to prove the "parallel reduction hypothesis", which holds that in the process of grammaticalization semantic reduction is paralleled by phonetic reduction. Even though the concept of coevolution itself remains underspecified, Bybee et al. (1994) use it on a par with notions such as *covary*, *correlation* and *parallel*, which seems to imply two things: first, that there is an interdependence between form and meaning; second, that the changes affecting the 'players' in this interdependent relationship occur simultaneously. The idea that reduction is paralleled in form and meaning and/or that form-meaning changes necessarily proceed in tandem has later been challenged (Bisang 2004; Traugott 2008a: 237; Verveckken 2015: 291).

A much more articulate account of linguistic coevolution can be found in Zehentner (2019), who discusses the diachrony of the dative alternation—the double object construction (1a) vs. the prepositional recipient construction (1b)—from an evolutionary constructionist perspective.

(1) a. *John gave Mary a book.*
b. *John gave a book to Mary.*

Zehentner (2019: 299) defines coevolution as "the process of constructions reacting to changes to one of them once they have become part of each other's environment, i.e. have formed horizontal relations". She argues that many formal and functional changes in the double object construction and the prepositional recipient construction can be explained as instances of constructional coevolution, sometimes triggered by or combined with adaptation to other environmental pressures (Zehentner 2019: 390–405). While Zehentner's theoretical treatment of the evolutionary linguistic concepts lays special emphasis on the cognitive processes involved in linguistic replication,[9] the discussion of coevolutionary effects in the development of the dative alternation takes a long-term diachronic perspective, based on population-level data. To my knowledge, no empirical studies on coevolution have used individual lifespan data.

Insofar as an individual's grammar is seen as a linguistic ecosystem (Petré 2014: 7–20), coevolutionary effects may also be manifested during the lifetimes of individual speakers. Can the results discussed in Sections 8.3.1 and 8.3.2 be interpreted in this light? The condition that constructions must be part of each

9 See, for instance, the interesting discussion of the two-stage model of cultural replication that is based on McCrohon (2012) and which distinguishes between *i*-memes (replicators in individual speakers' brains) and *e*-memes (replicators in the external environment) (Zehentner 2019: 239–241).

other's environment for coevolution to take place (see Zehentner's quote supra) is fulfilled: the data confirm that the special passives are intimately connected in individual usage, indicating that they can indeed be viewed as horizontal connections in (most) authors' associative networks. The longitudinal frequency data furthermore confirm that this association persists over the lifetime—again, in most authors (see Figure 8.3). In a broadly metaphorical fashion, then, one might say that the special passive constructions *coevolve* in individual grammars. If, however, coevolution is used in its strictly technical sense, denoting successive, reciprocal adaptations, then the results do not easily justify the term, mainly because the observed parallelisms in usage intensity do not necessarily imply adaptation or reciprocity. That is, it cannot be confirmed that the special passives adapt to each other in an evolutionary feedback loop, which would imply a chain of changes triggered by one another that is not supported by the data. What remains is the observation that most authors' use of the special passives is consistently associated across the lifespan. Considering all the above, I will stick to the factual description 'persistent association' rather than stretch the notion 'coevolution'.

8.4 Patterns of dissociation

The previous section has presented several pieces of evidence that the special passives are cognitively connected. Frequency and dispersion measures for the NCI and prepositional passive were found to correlate in individual usage, at least in the largest group of authors. Refining this picture even further, the longitudinal data showed that this association persists over the lifetime. While this evidence is compelling, specific traits of the data point toward a diachronic change that impacts the way the two constructions evolve in individuals, and ultimately in the community as a whole.

The first indication was already touched upon in Section 8.3. In the discussion of the longitudinal data (see Figure 8.3), I pointed out that next to the large majority of authors with a concurrent use of the two passives there was a small, yet not negligible group of authors whose lifespan data uncovered a pattern of dissociation. These are Owen (ID 110), L'Estrange (ID 111), Cotton Mather (ID 406), and Oldmixon (ID 504). Statistics derived from the linear mixed effects model presented in Section 8.3 confirmed that in these authors the amount of intraindividual variability is higher than in the scenario of persistent association that characterized most authors' usage. The individual panes are reproduced in Figure 8.5 for ease of reference (for a comparison with the other EMMA authors, see Figure 8.3).

Initially, the frequencies of the two constructions are fairly closely paralleled in these authors and they are comparable to the usage intensity found in other

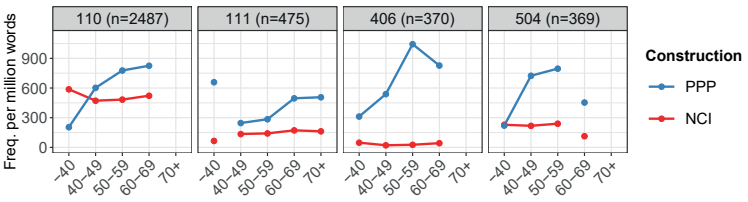

Fig. 8.5: Dissociation in 4 EMMA authors

members of their generation. Over the course of only a few decades this picture has changed dramatically: while the NCI retains approximately the same frequency throughout, the normalized frequencies of the prepositional passive accrue to the highest values within the respective generation.[10] Note that exactly these four authors were singled out in Chapter 6 as being the leaders of the larger community change observed in the prepositional passive. [11] In other words, the authors with the largest amount of lifespan change spearheaded the community-wide increase of the prepositional passive.

In a similar fashion, the lifespan disparities regarding the use of the passives are only visible in a minority group, yet some facets of this dissociation also percolate through the population at large. For example, a closer examination of the frequency correlation that was visualized in Figure 8.3.1 ($r = 0.65$, $p < 0.001$) reveals that the correlation is stronger in earlier generations than it is in later generations. Recall from Chapter 6 (Section 6.3) that the main frequency leap in the rise of the prepositional passive happened between the third and fourth generation of writers. Considering this, we might expect that the dissociation of the two constructions starts to materialize in the last two generations (i.e. authors born after 1650). This is corroborated by a comparison of the Pearson correlation coefficients for authors born before and after 1650 (generations 1–3 *vs.* generations 4–5): with a correlation coefficient of 0.84, the earlier-born generations exhibit a very strong positive correlation between the NCI construction and the prepositional passive; in the

10 L'Estrange (ID 111) only really starts to dissociate the two patterns around the age of 60; the other authors in the graph exhibit such a dissociation at least a decade earlier. Interestingly, L'Estrange is also a late adopter of innovative features in the grammaticalization of *be going to*, being one of two authors (in the active community of 25) who first adopt predictive *be going to* aged 60 or older (Anthonissen and Petré 2019).

11 Similar lifespan changes in the prepositional passive were found in a few other authors in Chapter 6 (most notably Gilbert Burnet (ID 312) and Daniel Defoe (ID 405)), but these authors were not included in the selection of 30 authors on which this comparison is based.

later-born generations, the strength of this correlation has weakened to 0.45, which signifies a moderate positive correlation.

The distributional data discussed thus far (lifespan frequency data and aggregate frequency counts for individual EMMA authors) have highlighted related effects of the ongoing diachronic change. The community-wide trend toward a more dissociated use of the two special passives is an example of intergenerational change, where earlier-born cohorts (generations 1–3) are found to have a much stronger overall correlation of the two constructions than later-born cohorts (generations 4–5). The shift is mirrored in the diachronic usage patterns of a minority of authors. These particular instances of lifespan change, reflecting an increasing dissociation of the two constructions with age, can be considered a magnification of the much slower processes of change that are manifested at the macro-level of language.

A third pattern of dissociation arises if dispersion is investigated from a diachronic angle. In Section 8.3, it was established that there is a fairly strong correlation between normalized *DP* values of the NCI construction and the prepositional passive ($r = 0.68$, $p < 0.001$), which means that authors with an even distribution of one construction tend to show an equal spread of the other construction, and vice versa. By and large, the dispersion metrics yielded similar results as the frequency measures, suggesting that the two variables are collinear. Knowing that the special passives' usage frequencies laid bare a diachronic shift in correlation strength, we may anticipate a similar diachronic pattern of dissociation relating to evenness of occurrence. Figure 8.6 plots the linear regression that models dispersion (operationalized as normalized deviation of proportions) as a function of the authors' birth dates. The authors' prototypical genre or community of practice is also included as a main effect, as this was previously shown to be a relevant factor (see Section 6.5). Note, however, that authors not belonging to either 'narrative' or 'religious' communities of practice were excluded (as pointed out in Section 6.4.1.1, the 'other' category slightly confounds the results). Regression estimates of individual predictors are shown in Tables 8.8 and 8.7.

Tab. 8.7: DP_{NORM} PPP ~ BIRTH DATE + GENRE

	Estimate	SE	*t*-value	*p*-value
(Intercept)	2.87	1.12	2.56	0.02 (*)
birthdate	-0.002	0.001	-2.23	0.04 (*)
genre = religious	-0.14	0.03	-4.37	<0.001 (***)
Overall fit	R^2=0.51; Adj. R^2=0.46; p<0.001			

Tab. 8.8: DP_{NORM} NCI ~ BIRTH DATE + GENRE

	Estimate	SE	*t*-value	*p*-value
(Intercept)	1.59	1.94	0.82	0.42
birthdate	-0.001	0.001	-0.58	0.57
genre = religious	-0.12	0.05	-2.23	0.04 (*)
Overall fit	R^2=0.19; Adj. R^2=0.12; p=0.11			

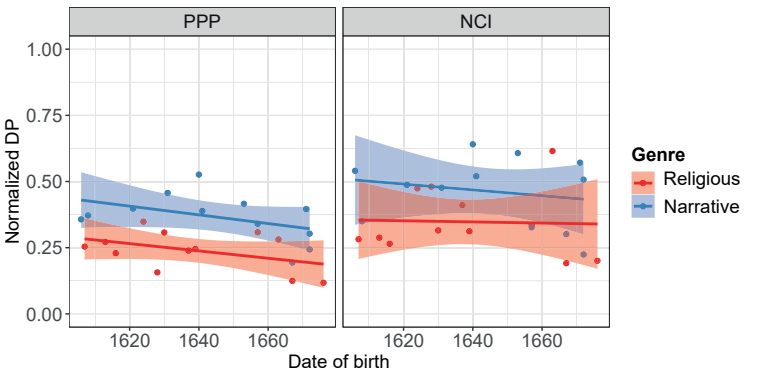

Fig. 8.6: Dispersion by date of birth and genre

The model summaries make for an interesting comparison. While both models show a significant effect of genre (as expected), the importance of birth date as an index of time and generation pans out differently. In the NCI model (Table 8.8), birth date is not a significant predictor, that is, there is no significant diachronic trend in the dispersion of the NCI. The model as a whole also shows a very poor fit (Adj. R^2 = 0.12) and is not significant. The regression coefficients for the prepositional passive (Table 8.7) present a different picture: the significant effect of birth date means that the prepositional passive comes to be more evenly distributed in the work of later-born authors (DP decreases with birth date). The resulting contrast in diachronic stability parallels the frequency change, demonstrating once more that time impacts the bond between the two passive constructions.

8.5 Cognitive and constructionist explanations

Taken together, the patterns of dissociation discussed in the previous section highlight the subtle divergence that set in in the course of the seventeenth century. The

diachronic changes observed thus far chiefly affected the distribution of the two construction types, that is, are quantitative in nature. Beyond this facade, however, there is good evidence that the changes are set into motion or at least partially co-determined by semantic-pragmatic factors. In what follows, I discuss how functional attributes could have motivated both stability and dynamicity in the use of the special passives (Section 8.5.1) and relate these results to entrenchment processes and their impact on various types of associations in speakers' constructional networks (Section 8.5.2). Embedded in our knowledge of cognition, these analyses will provide a cognitive-constructionist account for the observation that the special passives are persistently associated in individual usage (Section 8.3), but that their association is weakened across time (Section 8.4).

8.5.1 Constructional semantics

As subschemas of the passive construction, the NCI and prepositional passive share a number of formal and semantic properties. Formally, the special passive constructions inherit an abstract template from the passive construction, which prototypically consists of an (implied) subject, followed by a form of *be* and a past participle. All types may be complemented by an actor phrase, but this usually only happens for a specific discourse-pragmatic reason (e.g. placing a new agent in focus position). This abstract formal pattern is coupled with various related information-structural functions that involve the relative topicality of the participants in an event, profiling the patient participant. In Chapter 3, I elaborated on three central functions that motivate this argument structure: discourse-linking (creation of subject-topics), information rearrangement (maneuvering new agents into focus position) and impersonalization (omission of unknown or irrelevant agents). These functions are not exhaustive, nor mutually exclusive, i.e. a single instantiation of the passive may accommodate multiple discourse-pragmatic demands on the part of the speaker. Each of these principle motivations for using the passive are actualized in instances of the NCI and prepositional passive, as illustrated in (2)–(4).

(2) a. *The Ancient Britains painted their naked Bodies with Pictures of living Creatures, Flowers, Sun, Moon and Stars* […] *They wore the Hair of their Head long, which was naturally curled in many.* […] *They had ten or twelve Wives a piece, who lived in common among their Parents and Brethren; yet the Children were only accounted his who first married the Mother while she was a Maid: They were brought up in common among them. They were moderate in their Diet, as Milk, Roots, and Barks of Trees, and*

a little thing no bigger than a Bean, which for a great while took away both Hunger and Thirst; Neither would they eat Hens, Hares, Geese, nor Fish; yet would often Dine upon Venison and Fruits. Their usual Drink was made of Barly. They ***are reported*** *by Plutarch* ***to have lived*** *very long, many to an hundred and twenty years.*
(7903762, Nathaniel Crouch, 1695)

b. *'Tis true, I went Often to Church, but not to Pray, but* ***to be Pray'd to****, not as a Saint, but as a Mistress*
(a53051, Margaret Cavendish, 1662)

(3) a. *Samuel Wallas saith, he saw him pass along the streets some sixty yards from his door, and so he went in; But this old man* ***was not seen to pass*** *along the Streets by any one else, though some Persons were standing in their doors opposite to Wallas his house;*
(12561073, Nathaniel Crouch, 1683)

b. *Mean time Darius* ***was seized on*** *by his own Kinsmen, and Fettered in Golden Chains in a Parthian Town called Taneas,*
(10174694, Nathaniel Crouch, 1687)

(4) a. *It* ***is said to be*** *a Specifick in opening Obstructions of Liver, Spleen, and Womb, but in my Opinion it would be much more powerful if you added to the Composition, old Horse-Nails* [...]
(12256262, William Salmon, 1694)

b. *While he was Collector of Cork, the Traytor affected a more than ordinary Zeal for the Reform'd Religion, insomuch that he* ***was look'd upon*** *[a]s a Sort of Fanatick.*
(0127500500, John Oldmixon, 1716)

The examples in (2) highlight the discourse-linking properties of the special passives. Both the NCI (2a) and prepositional passive (2b) are employed by the speaker to maintain topic continuity. This is particularly clear in (2a), where we observe an extended topical chain referring back to *The Ancient Britains* across a longer stretch of text. Starting the sentence with the agent *Plutarch* would have broken this topical chain.[12] Similarly, in (2b), the use of a passive infinitival structure presents a smooth continuation of the highly salient (implied) subject *I*. The passive, in other words, allows the speaker to create a subject-topic from a patient relation. Argument reversal in long passives (3) is used to obtain a given-before-new order-

12 An additional reason might have been that *report* belongs to a small group of PCU verbs that are not typically found in the ACI construction. Still, an active construction with a *that*-clause would have been a viable alternative.

ing of participants; new information, which represents the most informative part of the utterance, is thereby moved to end-focus position. This way of rearranging information can be used to create a surprise effect on the part of the reader or to put particular focus on the agent (e.g. Darius being captured by his own kinsmen). Finally, the examples in (4) underscore the passive's usefulness as an impersonalization strategy. In both examples, the identity of the agent is irrelevant or something the speaker cannot or does not wish to reveal.

As an argument structure construction (i.e. constructions that relate grammatical relations and semantics, cf. Goldberg 2013), the passive is subject to the semantic coherence principle, which entails that a "verb can only be inserted into a given construction if the event structure of that verb and the argument structure of the construction match semantically" (Hilpert 2014: 30; see also Goldberg 1995). It follows that in a given sentence both contextual factors (e.g. relative topicality) and verb semantics (e.g. transitivity, or the availability of two participant roles) condition whether a particular verb will occur in the passive. Similar constraints hold for the special passives, which inherit these generic properties. While complying with the broad semantic profile of the passive construction, the special passives are subject to additional semantic constraints. It will be argued that the nature of these constraints, and their diachronic development, are crucial in explaining the constructional unity (persistent association) and dissociation of the special passives in the course of the early modern period.

As documented in Chapters 3 and 4, the increasing fixation of word order and the resulting need for subject-topics in Early Modern English fostered the use of the passive construction, which turns topical patients into topical subjects. The upcoming special passives benefit accordingly, gradually establishing their position in English grammar. In other words, the passive and special passives are linked by specific form-meaning attributes, and it is their information-structural function that incites their use at a time when the expression of information structure came to be constrained. As long as these semantic properties motivate the use of the special passives alike, they can be expected to correlate in individual usage. The fact that we observe genre-related trends should not come as a surprise either: each register or genre has a distinct functional need for expressing information-structural links by means of the passive, which affects their general usage intensity and allows us to predict whether or not an individual that is active within a particular genre will tend to use the special passives very frequently.

Against this background, we may view the dissociation of the special passives as a quantitative shift that is ultimately caused by a divergence in functional alignment, reflecting processes of schematization and specialization. Note that I will use these terms in this section to refer to the general properties of conventionalized patterns, not to developments in individual speakers (though of course speakers'

usage of the special passives may undergo similar developments along the lines of the communal trend). The emergence and spread of the prepositional passive is an example of schematization, which affects both formal and semantic properties. As shown in Chapter 6, the prepositional passive becomes more productive, continually extending the range of matrix verbs to new verb-preposition combinations, including more complex ones such as verbo-nominal collocations (e.g. *take notice of*) and phrasal-prepositional verbs (e.g. *go through with*). Formally, the schema extends from [SBJ *be* V-*ed* P] to include [SBJ *be* V-*ed* X P] patterns, where X is first found to accommodate nominal elements and later still adverbial elements. The more schematized version of the prepositional passive thus captures an optional interceding element between the verb and preposition that is part of a V-X-P collocation: [SBJ *be* V-*ed* (X) P]. Semantic constraints also appear to be continually loosened. While the earliest Middle English attestations suggest a scenario of lexical diffusion, presumably starting from a group of semantically related verbs around *leten of* 'regard, esteem, think of' (Denison 1981, 1985, 1993), the early modern period witnesses an intensified use of ever more varied verb-preposition collocations in the prepositional passive. Basically any verb-preposition combination (including complex types) that semantically resembles a transitive verb comes within the scope of the construction (see Section 4.2).

This is in stark contrast to the formal and semantic attributes of the NCI construction, which are arguably more naturally tuned in to processes of specialization. The prototypical NCI construction was previously defined as the combination of a subject, a form of *be* and the past participle of a perception, cognition or utterance verb ('PCU verb') that is complemented by a *to*-infinitive: [SBJ *be* V_{PCU}-*ed to* V_{INF}]. The syntactic peculiarity of this construction derives from the fact that the notional subject of the embedded verb (the infinitive) appears as the syntactic subject of the passive matrix verb (the PCU verb). The semantic relation between matrix verb and passive subject is equally unpredictable in constructionist terms because the passive subject cannot readily be conceived of as the direct object in an active construction with that matrix verb; rather, the matrix verb modifies a predication about the subject. Compare the paraphrases of (5): they do not believe *John*, they believe something *about* John, namely that he is a thief.

(5) *John is believed to be a thief.*
   a. they believe [John to be a thief]$_p$
   b. [that John is a thief]$_p$ is believed

It is not hard to see the information-structural gains of this particular set-up: the passive subject in an NCI construction conventionally refers back to a given discourse referent, while the proposition entailed in the embedded clause most likely

represents new information, thus creating a given-before-new ordering of information. Despite the shared information-structural functions, the NCI is semantically much more constrained than the prepositional passive as its matrix verbs are functionally restricted to the class of PCU verbs (including verbs of 'showing', see Section 4.3). These verbal slot fillers are intrinsically related to what I argued earlier constitutes the core function of the NCI construction: the speaker's epistemic qualification of a proposition *p* (see Section 7.3 for discussion). By using the NCI, the speaker indicates that there is an epistemological basis for the proposition *p*, which may be evidential (referring to an external source) or modal (expressing its compatibility with the speaker's current knowledge).

This qualifying use is largely in consonance with the information-structural incentive for using the NCI, but may also override it as a principal motivation. Previous analysis of the NCI (Anthonissen 2019; Anthonissen and Petré 2020) suggests that the NCI increasingly specialized toward expressing evidentiality. Chapter 7 corroborates and refines these findings, showing that the proportion of evidential uses increases and then reaches a point of saturation in generation 3, after which the evidential and modalized use exhibit stable variability (the modalized use retaining a proportion of approximately 0.30). A characteristic of the evidential usage type is that the speaker can relegate an evaluative statement to an external source without her having to make that source explicit. This kind of hedging or distancing is particularly useful in cases where the speaker wants to shrink responsibility for the proposition at hand. A similar pragmatic effect may be obtained by the modalized usage type (especially utterances with *may* and *can*); in such cases, the speaker does not employ the NCI to encode an external source for a particular statement, but rather to characterize the proposition as a possibility, thereby presenting her attitudes or views in a tentative manner (for details, see Anthonissen 2019 and Chapter 7).

In its capacity as a hedging device, the NCI construction is arguably less regulated by the general information-structural functions of the passive identified above (see also Chapter 3, in particular Section 3.4.1). Its conceptual scope is by definition narrowed: there is only so much need for saying that someone said, thought or believed something. Thus, a verb-subclass specific construction, such as the NCI, has a greater semantic coherence yet smaller semantic scope than the prepositional passive, which may attract novel types from a larger variety of semantic domains. A useful concept in this respect is 'semantic carrying capacity', introduced by Grieve et al. (2016) in analogy with Verhulst's model of population dynamics. It postulates that "the maximum frequency of a novel word (corresponding to the top of the s-curve) is likely to correspond to the 'semantic carrying capacity' of the word, that is, the maximum frequency of the meaning of the novel word being expressed in any form" (Nini et al. 2017: 117, following Grieve et al. 2016). While

this notion pertains to lexical semantics, the idea that words, and by extension constructions, have a distinct 'maximal' or 'carrying' capacity is enlightening: the semantic space that is covered by the NCI construction is more sharply delineated than is the scope of the prepositional passive. If during the course of Early Modern English shared information-structural properties propelled the use of both passive subschemas, and conditioned their conventionalization, the special passives' constructional bond got loosened as the constructions continue to fulfill their distinct onomasiological potential.

These ideas are supported by synchronic and diachronic snapshots of the constructions' productivity in the EM corpus. Syntactic productivity is here understood in terms of a construction's extensibility, that is, a "construction's ability to attract new or existing lexical items" (Barðdal 2008: 1). One way to explore the extensibility of a construction is to track the cumulative type frequency distribution across time, which is visualized in Figure 8.7.

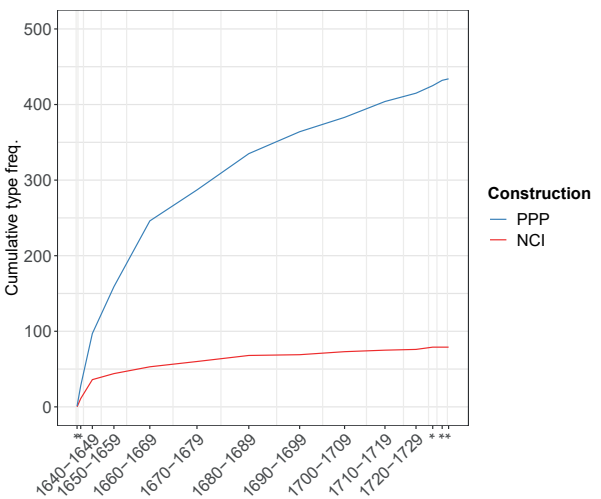

Fig. 8.7: Cumulative type frequency

The lines connect the cumulative type frequency computed per 10-year time interval, that is, the sum of previously attested types and types first occurring in that period. The width of the period, marked off by light-grey vertical grid lines, reflects the proportional size of the corpus part for that period. The resulting curves attest to the constructions' diverging use over time: the prepositional passive continues to expand to new types, whereas the productivity growth of the NCI proceeds at

a much slower pace and appears to become saturated. This would suggest that the NCI is nearing carrying capacity in the course of the seventeenth century. The endpoint of the curves represents the constructions' 'realized productivity' *V* (cf. Baayen 2009), i.e. a simple count of all types, which is clearly higher in the prepositional passive. The same holds for a comparison of type-token ratios: 0.12 (prepositional passive) as compared to 0.03 (NCI).

Note that a high realized productivity does not automatically correspond to a high potential productivity *P* (the ratio of hapax legomena to the total number of tokens of a given category), which estimates the growth rate of a particular constructional slot and thus provides an indication of saturation risk (cf. Baayen and Lieber 1991; Baayen 2009).[13] However, in the comparison of the prepositional passive and NCI, the two estimates of productivity align. Dividing the number of hapax legomena by the number of tokens yields a productivity index of 0.048 for lexemes occurring in the prepositional passive; with 0.007, the potential productivity of the NCI is much lower. This goes to show that while the NCI has a sizable number of types, it has nearly saturated the onomasiological space, limiting its potential for further expansion. Realized (*V*) and potential (*P*) productivity can be summarized in a measure of global productivity *P** that plots their coordinates in a two-dimensional plane (Baayen and Lieber 1991). The globally more productive construction is the one that scores high on both axes (see Figure 8.8).[14]

A closer inspection of the type frequency distribution furthermore reveals a disparity in the internal constituency of the verbal categories. The results are visualized in Figure 8.9. For each construction, types are classified according to their token frequency in the construction and the bars represent the proportion of attestations taken up by low-, mid- and high-frequency types. The different outcome for the hapax-based measure (potential productivity) is clear from this graph: the red fractions (freq. = 1) illustrate that hapax legomena account for respectively 4.8% and 0.7% of the examples. At the other end of the stacked chart, we see

13 The measures introduced by Baayen and colleagues originally targeted word-formation patterns in the field of morphology, yet they can be easily extended to constructions in line with the constructionist practice to treat morphological rules as constructional schemas.

14 Note that while the corpus size is held constant, the number of tokens on which Figure 8.8 is based is different because the prepositional passive is more frequent. If the prepositional passive's global productivity is based on the same number of tokens as the NCI (i.e. 2,602) rather than the same corpus size, its realized productivity (*V*) goes down (381 or -12%), but its potential productivity (*P*) increases markedly (0.063 or +31%). These values were obtained by performing repeated random sampling (50 times) of 2,602 prepositional passives and computing the average *V* and *P* of these samples. The value that is plotted in Figure 8.8 to indicate the prepositional passive's global productivity is therefore slightly more conservative than the one obtained by a comparison based on the same number of tokens.

that the prepositional passive has no matrix verbs in the 500+ range. The NCI, by contrast, has a large percentage of attestations that are taken up by high-frequency types.

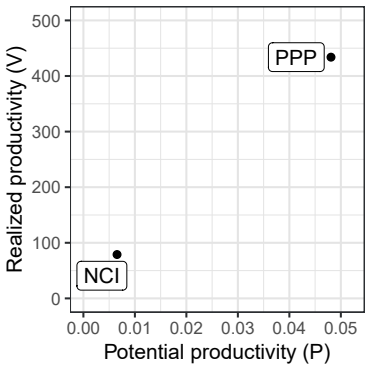

Fig. 8.8: Global productivity (*P**)

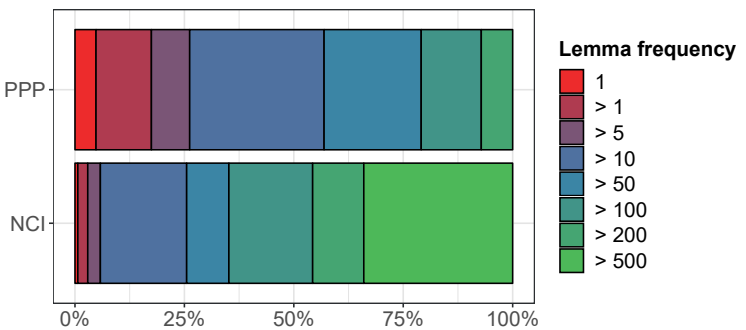

Fig. 8.9: Type frequency distribution

The discrepancy in the top-frequency bands is detailed in Table 8.9, which lists the five most frequently used lexemes in the constructions and their respective share of the attestations. Table 8.9 shows that *say*, the verb most frequently used in the NCI construction, accounts for more than one third of the examples (34%); and the five most frequent verbs for two thirds of all the examples (65%). The NCI is thus centered around a small set of high-frequency types. The five most frequently used types in the prepositional passive account for merely 21% of the examples.

Tab. 8.9: Top 5 lexemes in the special passives

	NCI	%	PPP	%
1	say	34.01	look (up)on	7.17
2	suppose	11.68	speak of	3.63
3	know	6.80	make use of	3.60
4	think	6.80	meet with(al)	3.37
5	find	5.53	take notice of	3.12

In sum, the prepositional passive has fewer high-frequency types and a sizeable set of mid- and low-frequency verbs, showing greater productivity and schematicity than the NCI construction. The NCI construction shows a relatively high degree of semantic coherence in the sense that the matrix verbs exhibit a considerable degree of internal consistency. As Barðdal (2008) points out, syntactic productivity is a function of type frequency, semantic coherence and their inverse correlation. The aggregate data show that the NCI and prepositional passive score differently on these variables so that they occupy different positions on the productivity cline. The prepositional passive, showing lesser semantic coherence and higher type frequency, is situated at the higher end. The NCI is found at a lower position: the construction can only attract new items within its delineated semantic space (such extensions are likely to be exemplar-based, i.e. produced by local, verb-specific analogies). The longitudinal data (e.g. Figure 8.7), however, suggest that this potential is close to being exhausted as the NCI is nearing semantic carrying capacity.

So far, I have focused on the verbal slot, which may be considered one of the main determinants of syntactic productivity (see Barðdal 2008), yet the other variable and optional slots may also contribute to or reflect the constructions' general propensity toward schematization or specialization. I will briefly compare the use of actor phrases (*by*-agents), subject length and additional constructional elements (e.g. the *to*-infinitival complement in the NCI). A cursory glance at the development of the NCI in Dutch will provide further support for the NCI's more specialized use.

The NCI's specialized semantics (its qualificational use as described above and in Chapter 7) is manifested not only in the verb-class-specific participial slot but also in the distribution of other variable and optional slots. A comparison of the proportion of long passives reveals a striking difference between the two special passive constructions: 16% of the prepositional passives are combined with a *by*-agent, while only 3% of the attested NCIs mention the agent of the matrix

verb.[15] Interestingly, the percentage found for the prepositional passive closely matches Seoane's (2006: 372) counts of the regular long passive for Early Modern English, which accounts for 15% of passives. This implies that the prepositional passive and regular passive in Early Modern English display similar levels of being recruited as an information-rearranging device to obtain given-before-new order; in the use of the NCI, this need is decidedly weaker.[16]

Another finding that is in line with the idea that the NCI is not *primarily* motivated by information-structural demands (see also Noël and Colleman 2010; Anthonissen 2019), and gradually less so, is the growing disparity in subject length. For patients to be able to serve as subject-topics in a passive construction, they must be given. As research on information structure has shown (e.g. Krifka 2008: 263; Lambrecht 1994: 137), shorter expressions tend to represent information that is more given, while longer expressions typically introduce new information. We may then use mean subject length as an estimate of givenness; this descriptive statistic is preferred to the median because longer subjects will be given a stronger weight (the median subject length is 1 in both constructions). This will give us an idea of the extent to which the subject slot allows information that is lower in the givenness hierarchy. The subject data of 30 authors yield nearly the exact same weighted average subject length for the prepositional passive and the NCI construction, namely 2.75 and 2.77 words. The discrepancy presents itself when subject length is examined diachronically, for instance, between generations and as a function of birth date. Linear regression models predicting mean subject length by birth date show a significant effect of birth date ($\beta = 0.012$, $t = 2.044$, $p = 0.05$) in the NCI model, but no effect in the model of the prepositional passive ($\beta = 0.006$, $t = 1.356$, $p = 0.20$). Thus, while mean subject length in the prepositional passive remains more or less stable, later-born authors use significantly longer subjects in the NCI. A closer examination of the results shows that there is a remarkable leap between generations 3 and 4: the earlier-born generations (1–3) center around a 2.48 average, whereas generations 4 and 5 show a leap to 3.21. In later generations, then, it has become more common to use new(er) or less given information (as indexed by longer expressions) in subject position in the NCI. While indirect, these findings corroborate the hypothesis that the NCI's information-structural properties become less salient, and that its prime motivator must be sought in its qualifying use.

15 Instrument phrases and causal *by*-phrases are not included in these counts.

16 No significant changes could be discerned in the period under investigation: the proportion of long passives remains more or less stable in both construction types.

The NCI's propensity for specialized usage gains further support from a diachronic comparison with Dutch (see, in particular, Fischer 1994; Noël and Colleman 2009, 2010, 2018; Colleman and Noël 2012, 2014; the following discussion is based on these works). An equivalent of the English NCI construction existed in Early Modern Dutch, yet the construction virtually disappeared from Dutch grammar when the influence of Latin waned. Even frequent NCIs of the type *gezegd worden* 'be said' (6), which peaked in the eighteenth century, did not survive.

(6) Papier, dat gesegt is uyt den Hemel gevallen te sijn.
paper that said is out of the heaven fallen to be
'Paper which is said to have fallen from Heaven.'
(Van Leeuwenhoek; cited in Colleman and Noël 2012: 7)

In Present-Day Dutch, three verbs still combine with the nominative and infinitive pattern (cf. *achten* 'consider', *veronderstellen* 'suppose' and *verwachten* 'expect'), but unlike the early modern NCI, they express deontic modality rather than evidentiality. In other words, the syntactic pattern survived in the language but only as a micro-construction following processes of semantic specialization and increasing register-specificity. This semasiological shift is of course quite different from what happened in English, where the NCI remained fairly productive, but it shows that in a related language, too, the pattern developed specific pragmatic associations. In fact, the semantic development of the Dutch NCI mirrors constructional changes in the English *be supposed to* construction (and to a lesser degree, the *be expected to* construction), which originally instantiated the evidential/modalized NCI, but started to develop into a semi-modal expressing deontic modality in the course of the nineteenth century (Disney 2016: 907) while the evidential and modalized usages continued to exist (cf. 'layering').[17] All in all, these developments indicate that NCI constructions, especially those with highly entrenched verb types, lend themselves well to the expression of specialized semantic-pragmatic content, at least more so than the prepositional passive.

A final property that exemplifies the NCI's higher degree of specialization concerns the semantic constraints on the *to*-infinitival complement. Noël (2001: 261) estimates, on the basis of sampled data from the BNC, that roughly 80% of NCIs feature the form *be* or *have* as part of the infinitival complement (either as a copula/possessive or as an auxiliary to a passive or perfective infinitive). In other words, approximately 20% of Present-Day English NCIs feature active lexical in-

17 More specifically, the *be supposed to* construction was likely innovated at the end of the eighteenth century, following a period with many indeterminate examples; by the mid-nineteenth century the deontic use had been conventionalized (Disney 2016: 907).

finitives. In EMMA, which covers an earlier period, active lexical infinitives still account for ca. 33%, which suggests that infinitival complements featuring *be* and *have* have become more common since the early modern period. Note that active infinitives of principally dynamic lexical verbs (e.g. *kill* in (7)) typically express generic meanings that do not conflict with the stativity constraint of the NCI's infinitival slot. This is illustrated by the final sentence in (7), which is part of a series of generic statements on venomous snakes.

(7) *The Dipsas kills those she stings with Thirst. The Hypanale causes them to Sleep to death, as happened to Cleopatra Queen of Egypt. The Hemorrhois makes them bleed to death. The Prester occasions them to swell till they burst; And not to poyson you with more names of venemous Creatures, the Basilisk* ***is said to kill*** *with her sight* […]
(10174717, Nathaniel Crouch, 1686)

Routinization of *to* + *be/have* sequences combined with high-frequency types such as *say* and *suppose* led to syntagmatic strengthening of specific exemplars, e.g. *is said to be* and *is supposed to be*, which came to resemble auxiliaries (cf. Bolinger 1974; Mair 1990: 115). In syntagmatic strengthening, symbolic, paradigmatic and pragmatic links pertaining to individual constituents are weakened (Schmid 2020: 391).

This section has zeroed in on constructional semantics in order to explain long-term communal and shorter-term individual processes of persistent association (Section 8.3) and dissociation (Section 8.4) in the use of special passives. I have argued that the passive and special passives are connected by means of specific form-meaning attributes and crucially instantiate the same information structure construction. A cognitive correlation between the special passives is to be expected provided that the use of those passives is principally motivated by the discourse-structuring functions inherent to the passive schema. The persistent association of the special passives in individuals' lifetimes is a strong piece of evidence of that. At the same time, the two constructions were shown to exhibit an inherently different semantic carrying capacity, which makes them susceptible to opposing mechanisms of change (schematization and specialization). As divergences grow, the constructions come to be dissociated in the minds of some individuals. The constant feedback loop between individual and social processes ultimately results in a stronger diachronic dissociation, as evidenced by the weaker correlation in later-born generations.

8.5.2 Constructional networks

The previous section has focused on constructional semantics to account for the aggregate and individual-level results that were obtained in Sections 8.3 and 8.4. This section zooms in on the underlying cognitive entrenchment processes, studying the various ways in which repeated usage may affect associations in speakers' constructional networks. In usage-based models of language, it is widely assumed that representational networks are gradually built through experience. A corollary of this view is that usage events may simultaneously represent and impact on the state of mental representations. In Sections 8.3 and 8.4 I focused on the first aspect, following the usage-based premise that linguistic utterances by individuals reveal something about how these patterns are cognitively organized in these individuals (cf. De Smet 2016b). The analysis in this section concentrates on the second aspect, that is, how usage events impact on various types of associations, which make up the fabric of speakers' linguistic knowledge. While each individual's constructional network will be different, speakers are assumed to rely on similar cognitive mechanisms to process linguistic material so that it is possible in principle to come to generalizations on the main psychological affordances as well as cognitive and linguistic effects. In what follows, I will try to disentangle the main entrenchment processes that are involved in the use of the special passives and which, taken together, shed light on the complex relationship between the two construction types.

The discussion draws on Schmid's (2017) classification of entrenchment processes, which is presented in Table 8.10. The left-hand column in this table lists different types of usage events that set into motion the cycles of entrenchment and conventionalization in the EC-model (see Chapter 2). When usage is fed into the cognitive system, it operates on various types of associations and at various levels of abstraction simultaneously (see also Blumenthal-Dramé 2012). The second column specifies which type of association (symbolic, syntagmatic, paradigmatic, pragmatic) is affected when a given pattern is repeated in usage. For instance, every time an identical sequence of elements is repeated (e.g. *spoken of*, *is said to be*), the syntagmatic association of the individual elements in this string are strengthened. Over time, this may accumulate in a number of cognitive and linguistic effects, which are captured in the right-hand columns.

The processes described in Table 8.10 go a long way toward explaining the patterns of association and dissociation found in Sections 8.3 and 8.4. Let us deal with the results from Section 8.3 (persistent association) first. The inter- and intraindividual data presented there point toward the existence of an abstract schema or constructional node (i.e. the passive construction) and highlight the cognitive reality of this similarity-based connection between the special passives.

Tab. 8.10: Survey of cognitive entrenchment processes (Schmid 2017: 11–12)

Repetition-related determinant	Type of association affected	Psychological affordances	Cognitive effects	Linguistic effects
– Token repetition of word-forms and fixed strings	– Symbolic association	– Memory consolidation – Routinization	– Increase in representational strength of symbolic association of specific form-meaning pairing	– Faster and more effortless processing of words and expressions with less interference from paradigmatic neighbors – Faster resolution of lexical and syntactic ambiguities – Early acquisition of words – 'Entrenchment' in a narrow sense in acquisition – Stability in morphological form – Resistance to analogical pressure and change – Reduction of phonological form and bleaching of meaning – Increase in frequency of usage

Tab. 8.10 – continued

Repetition-related determinant	Type of association affected	Psychological affordances	Cognitive effects	Linguistic effects
– Type repetition of variable construction (lexical or grammatical)	– Symbolic association	– Memory consolidation – Routinization – Categorization – Schematization	– Emergence of, and increase in, representational strength of variable schema (in cooperation with paradigmatic and syntagmatic associations)	– Constructionalization – Productivity – Innovation – New meanings, polysemy, partly under the influence of pragmatic associations
– Token repetition of identical sequence of elements	– Syntagmatic association	– Memory consolidation – Routinization – Chunking – Automatization	– Increasing holistic processing of specific sequence of elements – Automatic processing of chunk once started – Priming effects between parts of sequence or sequences of larger constructions	– Fusion, coalescence, formulaic language (idioms, routine formulae, irreversible binominals), collocation – Form: phonetic and morphological reduction – Meaning: reduction of semantic specificity (grammaticalization), loss of compositionality (lexicalization) – Tightening of internal syntagmatic bonds – Loosening of paradigmatic associations of composite parts
– Type repetition of functionally identical sequences with variable slots	– Syntagmatic association	– Memory consolidation – Routinization – Chunking – Categorization – Schematization	– Emergence of complex schematic constructions in variable slots (in cooperation with symbolic and paradigmatic associations)	– Constructionalization – Productivity – Innovation

Tab. 8.10 – continued

Repetition-related determinant	Type of association affected	Psychological affordances	Cognitive effects	Linguistic effects
– Token repetition	– Paradigmatic association	– Comparison	– Preferential selection	– Increase in strength compared to paradigmatic competitors – Attractor for analogical change
– Type repetition	– Paradigmatic association	– Comparison – Analogy	– Emergence of complex schematic constructions with variable slots (in cooperation with symbolic and syntagmatic associations)	– Basis for analogical change and pressure – Grammatical categories (word classes) – Word fields, paradigmatic relation
– Token or type repetition in specific context	– Pragmatic association	– Memory consolidation	– Rich memory of exemplars – From episodic to semantic memory	– Semantic change caused by invited inference, context absorption – Emergence of connotations – Emergence of register-specificity – Support for chunking

The rationale is as follows. In similarity-based taxonomic models, such as the organization of linguistic knowledge, the special passives both stand in a similarity relation (an 'is a' relation) to the passive, i.e. the NCI construction *is a* passive just as the prepositional passive *is a* passive. The type of contiguity that the special passives represent is different from associations based on co-occurrence in context; rather, similarity in this case is vertical: as special types of passives, the NCI and prepositional passive share some degree of functional similarity and hence appear in similar contexts (affecting symbolic and paradigmatic associations).[18] As demonstrated in Section 8.3, these associations appear to be cognitively real for most speakers. The usage patterns of the special passives correspond closer within individual speakers than they do between speakers, showing that within a range of socially accepted usage, constructional use is chiefly individually conditioned.

While the parallel development of the special passives is motivated by a higher-order passive schema, the patterns of dissociation described in Section 8.4 can be viewed as the outcome of a subtle interaction between constructional semantics (Section 8.5.1) and entrenchment processes at lower levels of the constructional hierarchy. These entrenchment processes, affecting symbolic, syntagmatic, paradigmatic and pragmatic associations related to the prepositional passive and the NCI, are discussed in the remainder of this section.

SYMBOLIC ASSOCIATIONS The dual nature of the linguistic sign as conceptualized by de Saussure has been extended to constructions: symbolic pairings of formal and semantic-pragmatic features. Whenever a linguistic construction is repeated, its mental representation (i.e. the association between form and function) is strengthened (cognitive effect), with productivity and innovation as linguistic side effects. Type repetition of the special passives may strengthen symbolic associations at various levels of abstraction, but most importantly the abstract passive construction (the pairing of [SBJ *be* V-*ed*] with complex information-structural meanings, see the preceding paragraphs) and the meso-constructions themselves, i.e. the NCI or the prepositional passive, which specify additional formal and semantic constraints (see Section 8.5.1 for details). Productivity effects relating to symbolic strengthening are particularly visible in the prepositional passive. Innovative features of the early modern prepositional passive include the extension to multi-word expressions (e.g. *cry out on*, *make use of*) and the isolated use of

18 Another example of similarity in syntactic environments is presented by Budts (2020) (see also Budts and Petré 2020), who shows how the historical development of periphrastic *do* was influenced by the paradigm of the modal verbs, which appeared in similar contexts. See also De Deyne et al.'s (2016) concept of contiguity by mediation, where semantic concepts such as *lion* and *tiger* come to be related in subjective experience not because they co-occur, but because they are used in similar environments.

what Visser (1973) calls the modern type (e.g. *this bed has been slept in*).[19] The NCI's functionality is limited to a more narrowly delineated semantic field (see the discussion in Section 8.5.1).

SYNTAGMATIC ASSOCIATIONS On the syntagmatic axis there is a difference in the relative share of the two main repetition-related determinants: (i) token repetition of an identical sequence of elements and (ii) type repetition of functionally identical sequences with variable slots. The potential fillers of a variable slot are related via paradigmatic associations, which is why type repetition of a syntagma automatically entails paradigmatic relationships. The psychological affordances uniquely associated with token and type repetition are automatization and categorization/schematization respectively.[20] As demonstrated in Section 8.5.1, the differences in type frequency distribution of the matrix verbs are profound: most of the attested NCIs feature one of four high-token frequency types (*say* (34%), *suppose* (12%), *know* (7%), *think* (7%)), while the verbal slot in the prepositional passive is highly variable featuring many low- and mid-frequency types (the verb with the highest frequency, *look (up)on*, accounts for 7%; all other verbs are below 4%). This naturally affects the variability of usage events that speakers are confronted with: the average speaker is likely to come across a variety of types in the prepositional passive, thus being affected by the second process (type repetition). She is also likely to come across many instantiations of strings like *is/are said to be* and *is/are supposed to be*. In a comparison of special passives, the proportion taken up by formally identical sequences (token repetition) is larger in the NCI, which makes its instantiations prone to becoming entrenched as lower-level chunks (see also Schmid's (2020: 235–237) principle of syntagmatic strengthening). The cognitive effects are well known: token repetition leads to holistic processing, while type repetition contributes to the emergence of a schematic construction with variable slots. The former is also associated with priming effects, which explains why the NCI is less evenly dispersed than the prepositional passive.

Linguistically, the relative importance of token repetition (as contrasted with type repetition) results in opposite developments along the lexical specificity axis. Token repetition of identical sequences leads to formulaic language, a decrease

19 An early attestation of such a use in the EMMA corpus is the phrase *Eggs that are sat upon by a hatching Hen* (a28965, Robert Boyle, 1673).

20 Recall from Section 2.4.1 that Schmid (2020: 343) in his most recent work argues that routinization (token entrenchment) and schematization (type entrenchment) are not qualitatively different, but rather reflect a "quantitative [difference] correlating with the degree of variance of what becomes routinized" (see, in particular, §11.3.1 in Schmid 2020). My focus here is on the linguistic differences between the NCI and the prepositional passive that arise from the different degrees of variability in the constructional slots.

in semantic specificity and a strengthening of syntagmatic bonds paired with a weakening of paradigmatic ones, all of which are manifested in the use of the NCI construction. Examples of routine formulae in the EMMA corpus include *may be said to V*, *cannot be said to V* and *was heard to say*. As shown in Section 7.5.3.2, speakers may develop a particular fondness for specific expressions. Fuller (ID 104), for example, was shown to have developed an idiosyncratic use of the *say*-NCI in that he increasingly employs the *may be said to V* pattern. Such self-feeding cycles that characterize the language of individuals have also been reported in the literature, a recent example being Neels's (2020) study on William Faulkner's use of the *let alone* construction. Even sequences that do not have obvious constructional status may represent entrenched patterns that uniquely identify a person (cf. Barlow 2013 and Wright 2017 on *n*-grams in individual usage). A convincing case is presented by Nini (2018), who shows that Jack the Ripper's use of the [$_{\text{VP}}$ keep [$_{\text{NP}}$ DET letter] [$_{\text{PART}}$ back] [$_{\text{SUBCL}}$ till I …]] sequence is highly distinctive. Another side effect of token repetition that can be observed in the NCI is the reduction of semantic specificity.[21] It should be noted that NCIs involving utterance and cognition verbs do not generally refer to identifiable acts of *saying*, *believing* or *thinking*, etc. As a result, the matrix verbs are often interchangeable. That is, it does not matter whether someone is *said* or *believed* to be or have done something: the construction marks the proposition as being reported. It is particularly the more or less fixed sequences with commonly instantiated types that become pragmaticalized in this way (see also below on pragmatic associations).

Due to the wide range of V-(X)-P collocations occurring in the prepositional passive, the construction is less susceptible to the developments observed for the NCI; rather the tendency is towards more productivity (as elaborated extensively before). While token repetition is of lesser importance at the constructional level, it is arguably the main determinant for the emergence of verb-preposition collocations, which, given a general compatibility with the passive construction, may appear in the prepositional passive. Linguistic effects of token repetition at the level of verb-preposition combinations include fusion and the emergence of collocations, loss of compositionality (lexicalization) and tightening of internal syntagmatic bonds. Fusion of verb-preposition combinations is evidenced in EMMA examples where V-P sequences are used attributively as in *the wish'd for Prize*, *that longed for*

21 Note that type productivity of a pattern and token entrenchment of specific instantiations of that pattern may exist at the same time, i.e. the NCI can still be a productive pattern if (a particular form of) the *say*-NCI is token entrenched. A recent study by Van Wettere (2018: 827) suggests that the productivity of a pattern is influenced by the top of the frequency distribution: "multiple *types* with high token frequency are more detrimental to productivity than a frequency distribution characterized by one *type* with extremely high token frequency".

day, and *any common agreed on Principles of Grammar*. The long list of dictionary entries for specific verb-prepositional combinations (e.g. in the OED 2019) are also a good indicator that they have acquired a special collocational status. In addition, V-P sequences may develop non-compositional meanings (e.g. *set on* 'attack') and the combination is often a fixed one (e.g. *insist on* but not *insist for*). For more details on entrenchment and conventionalization of V-P collocations, see Section 6.4.2.

In sum, the relative importance of token and type repetition in the use of the NCI and the prepositional passive leads to varying degrees of productivity and idiomaticity at the constructional level. In the case of the prepositional passive, syntagmatic and symbolic strengthening is strongest at the level of the V-P collocation, whereas token repetition in the NCI applies to a longer sequence and promotes the use of high-frequency types (e.g. *say*, *suppose*).

PARADIGMATIC ASSOCIATIONS Two aspects concerning paradigmatic associations are relevant to the discussion of special passives. The first one was dealt with earlier in this section, where I described how the special passives instantiate a more generic passive schema. This is a form of type repetition that draws on domain-general psychological abilities such as comparison and analogy and leads to the emergence of complex schematic constructions with variable slots. If special passives are processed as passives, the passive schema itself becomes more schematic, as it can be instantiated by exemplars that feature less prototypical elements (see also the discussion in Section 3.4.2).

Paradigmatic associations are also relevant at lower levels of abstraction, most notably in connection with the variable slots in the NCI construction and prepositional passive. The different slots, which are characterized by different degrees of paradigmatic variability, have been discussed extensively in Section 8.5.1; I will therefore only recapitulate the take-home message, which concentrates on the participial slot (i.e. the slot that features the main verb of the passive phrase). As shown in Section 8.5.1, there is a marked difference in the range of items that could potentially fill this slot in the NCI and prepositional passive, and how these fillers are proportionally related. The NCI selects its types from a semantically coherent verb class, which is why the paradigmatic associations between the selected types are fairly strong. At the same time, the distribution of the fillers is highly skewed toward a small set of frequently occurring verbs (e.g. *say*, *think*, *know*). The prepositional passive, by contrast, exhibits strong paradigmatic variability (many semantically diverse types) in its verbal slot, leading to a high degree of productivity. In brief, this disparity in 'paradigmatic dispersion', which, as argued in Section 8.5.1, is semantically motivated, explains why the development of the special passives diverges over time. Connecting these results to the survey provided by Schmid (2017) (Table 8.10), we can observe that the cognitive-linguistic differ-

ences (e.g. increasing schematicity of the prepositional vs. preferential selection of one or a small set of slot fillers in the NCI) ensue from the relative importance of type and token repetition and the different degrees of paradigmatic variability in the variable slots.

PRAGMATIC ASSOCIATIONS When constructions are repeated in a specific context, they may develop pragmatic associations. These associations are consolidated in memory and may become an integral part of the meaning of a construction. The process leading to an "increase in situational conformity of the whole in its role as a metacommunicative marker" is known as "pragmaticalization" (Schmid 2020: 155). Linguistic effects include semantic change (via invited inference and context absorption), the emergence of connotations and register-specificity and susceptibility to chunking. The NCI is a case in point. On various occasions in this work (see, in particular, Chapter 7 and Section 8.5.1), I have elaborated this idea, demonstrating how the NCI is employed as an argumentative device (in particular as a marker of evidentiality and as a hedging device) when speakers wish to qualify their commitment to a factual statement. While such inferences may not be present or intended in every single attestation of the construction, the inherent potential is there for speakers to exploit. In other words, the frequent and more or less fixed sequences (e.g. with *say*) appear to be more strongly pragmaticalized than the infrequent ones. Noël and Colleman (2010: 8) have argued that the NCI "has *always* been more than a mere passive". Some qualitative pointers, described in Noël (2008), indicate that the pragmatic effects described above are also found in the Latin construction, which may have served as a model for the English NCI. My own results confirm the special status of the NCI, but furthermore indicate that the NCI's inherent evidential potential has been strengthened over time, which is likely to have solidified the pragmatic connotations associated with it. The concept of pragmaticalization also helps explain why the NCI is favored in particular genres: the NCI's ability to modify and justify evaluative claims makes it a useful tool in discourse contexts where a more direct expression of the writer's views would be frowned upon, e.g. in journalistic and academic genres (cf. Noël and Colleman 2009).

It is safe to conclude from the foregoing that the information contained in constructional networks is incredibly complex. Even speakers' representations of a single construction (such as the prepositional passive or NCI) keep track of a myriad of associations at various levels of abstraction. Importantly, the combined results of the diachronic analysis and the survey of entrenchment processes involved give substance to Schmid's (2020: 337) claim that "change can be prompted not only by internal and external innovation, variation, analogy, and paradigmatic conflicts [...] but also by the repetition of fully licensed instantiations of conventionalized utterance types". That is, long-term changes do not solely originate in innovations

and variation (altered replication), they may also be triggered by the regular replication of conventionalized patterns. On this view, the diachronic weakening in the association of the special passives emerges from the subtle interaction between various entrenchment processes and constructional semantics (in particular semantic scope). This is a long-term change that proceeds largely unconsciously[22] and is a prime example of how "[c]hanges in individual or collective relative usage frequencies can promote the strengthening of one type of association and weaken others (syntagmatic strengthening, paradigmatic strengthening, pragmatic strengthening and their consequences) and lead to a re-organization of the conformity profiles of utterance types" (Schmid 2020: 337).

Figure 8.10 is an attempt to capture the effect of such a reorganization in the case of the prepositional passive and the NCI. Evidently, this is a highly simplified and schematic version that conceals the great variety and complexity of the processes discussed earlier. Similar to the partial taxonomy of passive constructions presented at the beginning of Section 8.3, vertical instance links illustrate that the prepositional passive and NCI are "special case[s]" (Goldberg 1995: 79) of the passive construction that are more fully specified. The passive schema thus captures the generalization that exists between the special passives and all other passive constructions (which are not represented here).

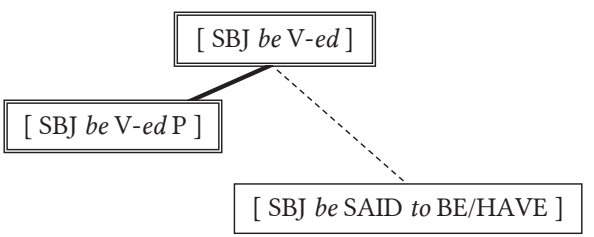

Fig. 8.10: Development of passive subschemas

22 An interesting exception is Dryden (ID 210), who at some point noticed that he had been using stranded prepositions – an increasingly popular feature of English that conflicted with his idea of grammar where prepositions are supposed to be followed by a noun and not separated from it (see Section 6.3). As a result, he started correcting his writings. While Dryden's later use of the prepositional passive may have been affected by his aversion to stranded prepositions, the NCI was not, as this construction thrived under Latin influence. Dryden's diverging attitudes are reflected in his final decade of writing (see Figure 8.3): after a career during which the two constructions showed a parallel increase in frequency, the prepositional passive exhibits a sudden drop in usage whereas the frequency of the NCI appears to stabilize.

What is different in this representation of the taxonomy is the relative position of the two special passive constructions. The thickness of the instance links and the closeness to the higher-order passive schema are intended to depict the dissociation of the prepositional passive and NCI construction in the period under investigation. It reflects the increasing schematization of the prepositional passive, which accommodates an ever-increasing variety of V-P combinations. The verbal slot is primarily constrained by the semantic features that modulate the use of the regular passive. The prepositional passive, then, does not specify any additional requirements other than that the relation between the passive subject and the state of affairs conveyed by the verb-preposition combination invokes a transitive event frame.

In the representation of the NCI, by contrast, the participial and infinitival slot are now lexically specified. This is not to imply that individual speakers do not have a schematic representation of the NCI construction. Rather, this representation highlights the finding that instantiations of the NCI tend to come in a particular form, exhibiting a preferential selection of the matrix verb *say* (in one third of all attestations) and the (passive) infinitive with *be* or *have*. In substituting V_{PCU}-*ed* with SAID and V_{INF} with BE/HAVE, I use capitals letters to indicate that these verbs are prototypical instances of the NCI construction. Based on the type distribution other lexically specified NCIs may include [SBJ *be supposed to* BE] and [SBJ *be known to* BE]. These sequences may serve as pragmaticalized lexical templates (memorized exemplars) that speakers can modify based on local analogies. This is a plausible scenario given the skewed distribution of exemplars.

Importantly, the NCI and the prepositional passive are only expected to be associated in individual usage if speakers process them as instances of the passive construction. The longitudinal results showed that the association was stronger in earlier-born authors, which suggests that their use of the special passives was more strongly motivated by the abstract passive schema (at least compared with the later-born authors). The growing dissociation, then, is but a natural consequence of the gradual pragmaticalization of the NCI and—to a lesser extent perhaps—the schematization and frequency increase in the prepositional passive. That is, the development of the prepositional passive reflects a further approximation to the regular passive; its schematization contributes to the dissociation with the NCI, but can hardly be seen as the process triggering it. Conversely, the NCI undergoes a semasiological shift that leads to a growing emancipation from the passive construction. The NCI is, in other words, first and foremost an NCI, i.e. a construction in its own right; the prepositional passive is first and foremost a passive.

8.6 Conclusion

In usage-based constructionist models of language, it is generally assumed that linguistic items (form-meaning pairings) are organized in a dynamic associative network. A speaker's inventory of constructions is gradually built through experience with language; additional exposure to language continuously finetunes the relations in this network, a development that is not restricted to childhood but continues to unfold throughout adulthood. If nodes or associations in the network change, this is expected to have ramifications for related constructions. While this kind of change has been studied at the aggregate level of the community, few attempts have been made to study individuals' behavior in this respect. Taking up the case of the special passives, this chapter set out to advance our understanding of the network architecture of linguistic knowledge. The longitudinal, individual-level data offer a unique snapshot of how speakers' linguistic knowledge is organized and may be reorganized over time.

By comparing the use of special passives at the micro- and macro-levels of language, I aimed to establish whether they are cognitively related, and if so, whether changes in one construction prime changes in the other (coevolution). The results sections (8.3 and 8.4) focused on different aspects of the analysis. Section 8.3 has provided evidence that the two special passive constructions, which in linguistic theory are perceived to be related in a constructional network, are systematically linked in individuals. I have shown that usage patterns of the special passives exhibit considerable interindividual variation, but are remarkably similar in individual usage. Further support for a cognitive connection comes from the lifespan data, which verify that the two constructions are persistently correlated in the majority of speakers. Overall, there is compelling evidence that the special passives are connected in speakers' associative networks. While the special passives' usage is largely paralleled over the lifespan, it could not be safely established that they truly coevolve, i.e. reciprocally adapt to changes in one another.

The lifespan data of a small but not negligible group of authors uncovered a pattern of dissociation, which called for further analysis. Section 8.4 zoomed in on manifestations of dissociation and found that the constructional bond between the two types of passives was loosened during the period of investigation as later-born generations exhibited a weaker correlation between the two passive constructions. Further analysis, presented in Section 8.5, has connected this increasing dissociation to a number of construction-specific developments that reflect the outcome of a subtle interaction between entrenchment processes and constructional semantics. By exploring constructional semantics and the impact of entrenchment processes on constructional networks, these analyses provide a plausible explanation for

the two main findings of this chapter, i.e. (a) persistent association of the special passives in individual usage and (b) their dissociation across time. The dissociation was attested at the community level (intergenerational change) but also, in a more extreme fashion, during the lifetimes of four EMMA authors. Even though we may still be "a long way from being able to make accurate predictions on the mental representation of language from usage data" (Blumenthal-Dramé 2012: 214), I hope that the analyses in this chapter have demonstrated that usage data drawn from large-scale corpora of interconnected individuals are a worthwhile avenue for future research.

9 Conclusion

9.1 Objectives

In a 2003 paper on language change, Denison (2003: 61) wondered: "does an individual's usage change as he or she gets older, or is overall change through time in a language merely a function of changes in the population, with older speakers becoming inactive and dying, and younger speakers continually entering the community?" Until recently, the answers to these and related questions were out of reach to researchers in linguistics (especially for low-frequency phenomena), as longitudinal data of individual speakers and their respective communities are hard to come by. The newly-established EMMA corpus and its medium-sized companion EM, the design of which was discussed in Chapter 5, provide one of the first large-scale resources to help tackle these questions. Specifically, the present study set out to address three fundamental theoretical questions about the individual and the community in language change (see Chapter 1):

1. How do variation and change at the individual level interact with change at the community level?
2. Is there evidence for constructional change in syntactic constructions past adolescence? If so, how closely do lifespan changes follow community trends?
3. Are related linguistic patterns (such as the special passives) associated in individual mental grammars? If so, do these constructions influence each other's development in individual usage?

The rise of cross-linguistically rare passives in the history of English was selected as a suitable cluster of case studies to inform linguistic theorizing. Because a given linguistic phenomenon rarely abides by a single principle of change, another aim of this work was to uncover the complex interplay of language-internal and -external factors that effectuated (or obstructed) the rise of the special passives. In what follows, I evaluate the main aims of this work, both the descriptive (Section 9.2) and theoretical ones (Section 9.3), and identify some avenues for future research (Section 9.4).

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9.2 Descriptive results

9.2.1 EMMA corpus

An important descriptive aim of the *Mind-Bending Grammars* project was to compile a corpus that could be used for examining variation and change in individuals. The EMMA corpus (Petré et al. 2019) comprises the writings of 50 carefully selected English authors born in the seventeenth century (texts in the corpus cover the period 1623–1757). To track longitudinal developments in individual use, it was necessary that prospective writers had been prolific over a long period of time, ideally exhibiting a fairly even distribution of works across the lifespan. We furthermore focused on authors with strong ties to the London society. To examine how individual usage scales up to broader sociolinguistic structure, we identified a number of social criteria to be met. We looked for authors with social, political and stylistic connections to other individuals in the selection. In the selection as a whole, we valued a distribution across different professions or communities of practice. The authors, 50 in total, were furthermore divided into 5 generations so that variation and change could be studied at various levels of social embedding.

It is hoped that EMMA will prove to be a useful resource not only to historical linguists, but also to cognitive and social scientists interested in studying language from the dual perspective of the individual and the community. Comprising digital editions of some of the most important Renaissance authors, playwrights and religious leaders, EMMA may furthermore be of interest to literary and historical scholars. Beyond the results reported here and other research related to the *Mind-Bending Grammars* project (e.g. Petré and Van de Velde 2018 and Anthonissen and Petré 2019 on *be going to*; Standing and Petré 2021, n.d., on cleft constructions), publications making use of EMMA are already underway (e.g. Fonteyn and Nini 2020).

9.2.2 Emergence and spread of the prepositional passive

With attestations dating back to the thirteenth century, the origins of the prepositional passive have to be situated in the Middle English period. It is now largely uncontested that the emergence and spread of the prepositional passive was fostered by a number of language-internal developments, most notably the extension of preposition stranding, effects of word order change, case syncretism and the loss of the prefixal system. Despite the remarkable variability of verb-preposition types in the pre-1400 material (as documented most recently by Dreschler 2015), the postulation of a syntactic rule is misguided because it is incompatible with the

late appearance of conventionalized V-X-P collocations (such as *make use of*, *give heed to*, *cry out on*) in the prepositional passive as well as some other restrictions in early prepositional passives. In the early material studied by Denison (1981, 1985, 1993), a substantial number of verbs recruited into the prepositional passive construction are found to share similar semantic and phonological properties. The most frequent verb in this cluster, *leten of* 'regard, esteem, think of', is furthermore found in constructional environments that exhibit structural or semantic commonalities with its use in the prepositional passive, which made its appearance in the latter less marked. Denison regards these findings as tentative evidence that the prepositional passive might have spread by lexical diffusion, with *leten of* as the putative starting point. This fits well with the gradualness of the change, but does not perhaps give a fully satisfactory account of why studies such as Dreschler's (2015) find such a wide range of verbs in the initial stages.

I argued that it can be quite revealing to approach this issue from the perspective of entrenchment and conventionalization processes. The lexical diffusion account, as well as most other explanations for the existence of the prepositional passive, rely on the reanalysis of constituent boundaries which causes prepositions to pattern with the verb rather than the noun phrase, forming a complex transitive verb that is eligible for passivization. I argued that reanalysis of V-P collocations is best seen as an epiphenomenon of entrenchment processes such as routinization and analogy. On this account, V-P sequences become entrenched as patterns of associations in the minds of individual language users as a function of repeated usage in social interactions, which in turn triggers their conventionalization in the speech community. This dynamic account allows for a gradual spread of the prepositional passive in the speech community. It is plausible that in the early stages the construction was acceptable for some speakers, but not for others, and that among those who had already adopted the construction, usage was initially constrained to specific V-P sequences. Those local patterns need not have been fully identical to the patterns used by other speakers, but a degree of overlap is to be expected since each individual's knowledge eventually builds on what is already present in the community. As such, this perspective connects two important findings about the aggregate record of the early prepositional passive: first, that prepositional passives recruit a remarkably wide range of V-P collocations (owing to slightly different patterns in individual usage) and second, that there is a cluster of closely-related and commonly used V-P collocations (owing to analogical extension and usualization/diffusion of local patterns). Analogy—a domain-general cognitive skill—not only operates during item-based extension, it is also crucially involved in detecting whether the event structure of a given V-P collocation is semantically coherent with the passive construction (see Goldberg's (1995) 'Semantic Coherence Principle'). That is, only if a particular V-P sequence evokes an event structure that

resembles the event structure of transitive verbs will it be licensed by the passive construction.

The corpus studies that were reported on in Chapter 6 focused on the seventeenth and eighteenth centuries, during which the spread of the prepositional passive was still in full swing. At the aggregate level of the speech community, this was evidenced by a steady increase in frequency, the ongoing diffusion of novel types (including complex V-X-P sequences), and a more even dispersion of the prepositional passive in the work of later-born authors, accumulating in increased schematicity. Such frequency effects are in line with what is known about mechanisms in ongoing constructional change. The study furthermore provided the first corpus-based comparison of individual- and community-level aspects related to the prepositional passive's synchronic use and its development over time. It detailed the cognitive effects of repeated usage, in particular type and token repetition, and demonstrated how individual constellations scale up to patterns at the aggregate level of the community (see Sections 9.3.1 and 9.3.2 below for the theoretical implications). A by-subject comparison of the most entrenched patterns showed that a number of frequently occurring V-P collocations are recurrent in individual speakers' most commonly instantiated types, but that there are also remarkable idiolectal preferences. The main argument advanced in Chapter 6 is that such patterns of individuality are not insignificant, but that they can play a meaningful role in advancing ongoing change as small individual differences feed back to the speech community and can be magnified as time passes. In this chapter, I also examined how token repetition affects the syntagmatic associations of individual V-P sequences, and how this relates to their occurrence in the prepositional passive. The corpus findings largely corroborated the arguments made in the previous paragraph, showing that the degree of entrenchment/conventionalization and semantic fit co-determine the productivity of a given V-P combination in the prepositional passive. By capitalizing on social network information and corpus-based statistics, it was furthermore possible to get a better grasp on the correlation between speakers' linguistic behavior and their social identity.

9.2.3 Emergence and spread of the nominative and infinitive

The NCI and its active counterpart (i.e. the *believe*-type ACI) first started to appear in the late fourteenth century; initially, attestations of the NCI were found primarily in translations from Latin or in Latin-inspired prose. While the influence of Latin is manifest, the emergence of the NCI and ACI with *believe*-type verbs is ultimately sanctioned by language-internal developments relating to the shift from OV to VO and the use of passive *to*-infinitives, an important consequence of which was

that the Latin-type ACI/NCI came to resemble native syntax, again pointing to analogy as a crucial mechanism in change. Specifically, the discussion revolved around the innovative use of native ACI constructions with verbs of permitting and commanding, which made available the novel combination of a two-place reading and a *to*-infinitive, i.e. features that also characterized the new *believe*-type ACI. Intriguingly, early attestations of the NCI and ACI show a higher incidence of passive forms (i.e. NCIs) than expected on the basis of the general distribution of actives and passives. Studies on ACIs and NCIs in Early Modern and Modern English furthermore suggest that this inclination for passives grew stronger over time. NCIs also underlie fewer constraints and are more productive than their active counterparts.

A compelling explanation of this phenomenon comes from the interaction between syntactic and information-structural principles (see Los 2005, 2009; Dreschler 2015). As explained in Chapter 3, the old ways of mapping syntax and information structure were profoundly restructured when word order became more fixed. Clause-initial objects and adverbials became pragmatically marked, leaving the subject as the sole unmarked discourse linker. The consolidation of the NCI—a construction that places a (typically) given discourse referent in subject position—can thus be seen as a response to the growing demand for topical subjects resulting from word order changes. At the same time, information-structural needs could not have been the only factor instrumental in the NCI's rather dramatic rise (see Chapters 3 and 7). Previous work (e.g. Noël 2008) has suggested that the growth of the NCI might be related to its inherent potential to signal evidentiality. This question was further explored in Chapter 7, which presented the first large-scale quantitative analysis of the NCI's semantics. While the classification draws on Noël's (2008) original proposal, I have argued that there are two rather than three basic usage types of the NCI, referred to in this work as the modalized and evidential NCI. These usage types share the function of epistemic qualification, but they differ in marking the source for the proposition as either internal (Source = Self) or external (Source = Other). By examining how this dual functionality developed over time, I sought to probe into the subtler qualitative aspects of constructional change, both at the level of the community and the individual.

Two developmental stages could be discerned in a between-generation comparison. The transition between the first three generations was characterized by a steady increase in the proportion of evidential uses; this upward trend was followed by a slight drop and stabilization in the second phase, covering generations 4 and 5. The distributional shift, which marks the NCI's specialization into a marker of evidentiality, settles at around 70/30%. The corpus analysis also revealed some degree of (interindividual and linguistic) variation regarding the association of the instantiated PCU verbs and the NCI's semantic-pragmatic function. At various

points in the analysis, it was illustrated how this can play out at the level of individual usage. Usage profiles were not only compared *between* authors, but also *within* authors. These longitudinal findings shed new light on how the semasiological shift toward the stronger entrenchment/usualization of evidentiality proceeded at the micro-level of language. About one third of the authors showed a significant lifespan trend (including two authors whose development is only marginally significant), principally in the direction of the community trend; some lifespan changes that are opposed to the general course could be attributed to idiosyncratic developments arising from self-feeding cycles of entrenchment (typically involving lexically specified patterns). The most drastic lifespan changes were found in the first generation of EMMA authors, which could indicate that the change might have started earlier than captured by the EMMA data.

9.3 Theoretical results

The following sections summarize the findings regarding the three fundamental research questions this book sought to address. Coming to grips with the role of individuals in sustaining but also potentially in disrupting the structures that emerge at the macro-level of language is not only of interest to historical linguistics, the findings are also relevant to complex adaptive systems theory, which has only fairly recently been introduced to the study of language. Seen from this perspective, Section 9.3.1 concentrates on the emergent properties and self-organizing dynamics of the system, and how they ensue from the complex interaction between individual agents, whereas Sections 9.3.2 and 9.3.3 focus on how adaptive behavior reveals itself locally (i.e. in individual agents and their internalized grammatical systems). For the most part, the summaries in Sections 9.3.1 and 9.3.2 draw on the results obtained in Chapters 6 and 7, and Section 9.3.3 on the discussion in Chapter 8.

9.3.1 Interplay between the individual and the community

The first major question that speaks to the issue of individuality in language is how variation and change in the individual interact with change at the community level. Importantly, diachronic change is argued to be driven by the same cognitive and social mechanisms that motivate synchronic variation. Variation was studied from various angles. Speaker-based variability emanates from two primary sources: differences *between* speakers (interspeaker variation) and differences *within* speakers (intraspeaker variation). A general finding from the frequency data on the special passives is that the potential for interspeaker variation is much larger than

the potential for intraspeaker variation (see Chapter 8 and Section 9.3.3 below). Not all of this variation is environmental noise, or "below the level of linguistic significance" (Labov 2012: 265), as sometimes purported. In fact, the studies in Part III have revealed two principal scenarios in which individual variability may perturb the community grammar and advance constructional change, which are recapitulated in the following paragraph.

First, interindividual variation may boost linguistic productivity at the aggregate level of language. The expansion of the prepositional passive is a case in point. The patterns that are most strongly entrenched in individual usage tend to comprise a number of frequently occurring V-P combinations interlaced with the author's own idiolectal lexical preferences. Authors may also store the prepositional passive construction differently, from lexically filled templates to more abstract generalizations. In other words, type distributions at the individual level do not simply replicate community-level distributions. Even though most authors did not significantly 'schematize' the prepositional passive across the adult lifespan, increasing productivity still emerged at the community level because individual variation was amplified in the long run. Second, the rate of change is not solely conditioned by generational change (i.e. change through first language acquisition), but may also be advanced by accompanying lifespan changes (intraindividual variation) if at least a substantial number of speakers adapt their linguistic behavior in accordance with the population-level trend. Several changes discussed in this work evolved through a combination of inter- and intragenerational change, for instance the frequency development of the prepositional passive (Chapter 6) and the proportional shift in the NCI's semantic-pragmatic use (Chapter 7). Because this type of change is recurrent, it seems plausible that lifespan changes specifically contribute to those changes that are driven by routinization and usualization (see Chapter 2, Section 2.4.1).

While individual variation in language is more pervasive than traditionally assumed, and often difficult to account for, one can still distill a number of ways in which this variation is structured, that is, how it reflects what Weinreich et al. (1968: 100) call "orderly heterogeneity". Here we are essentially looking at social factors known from sociolinguistic research, which may help to delineate groups of people that are likely to share similar experiences. The topic was addressed in Chapter 6 based on data for the prepositional passive. Authors' constructional usage profiles were primarily evaluated against classifications of age cohorts, communities of practice and social network proximity. Other levels of social structure can be conceived of, but EMMA's design already reduces some potential effects of social stratification because all individuals (barring a few social outliers) are part of a London-based network of writers. Variation in the use of the prepositional

passive revealed effects of age cohort, social membership (two larger communities of practice) and, more tentatively, of social network proximity.

9.3.2 Lifespan change

The previous section has addressed individuality mainly from a systems perspective, with individual speakers being conceived of as heterogeneous agents who participate in numerous local interactions or usage events. The following summary takes individual grammars as the primary unit of analysis and reviews if and to what extent individuals change their linguistic behavior in adulthood. It specifically addresses lifespan change in syntactic constructions, which is still largely uncharted territory. Lifespan change or adaptation is not a matter of cognition alone; it also has social underpinnings, which begs the question: insofar as language users change their linguistic habits (i.e. show malleability past adolescence), to what extent is such behavior constrained or motivated by social pressures?

Adaptive behavior across the lifespan was attested in both case studies, yet each case also pointed to potential limits of lifespan change. Chapter 6, on the prepositional passive, focused on effects of routinization and schematization. These entrenchment processes were discussed against the backdrop of collective behavior, which showed that the prepositional passive underwent marked changes in terms of frequency (a strong increase) and syntactic productivity (extension to novel items, relatively high *P* or potential productivity). Tracking normalized frequencies across time, I found that 38% of the authors remained fairly stable in their use of the construction (their rate of change being less than ±25%). Of the individuals with higher rates of change, the majority (65%) followed the community trend, which possibly signals social accommodation. Ten authors in total (i.e. 20% of all authors in the sample) exhibited an extreme increase of more than +100%; these authors typically obtained the highest rates in their respective generations. In sum, when a particular construction undergoes a collective increase, speakers confronted with this change may adjust their own usage frequencies. Such changes are driven by routinization in individual speakers and typically follow the community trend (yet opposite trends and fluctuating use are also attested). Effects of routinization may thus continue to manifest themselves during the lifetime, even in old age. Productivity across the lifespan proved to be a different story. A comparison of type-token ratios did not reveal significant effects of schematization, which may indicate that qualitative shifts are generally harder to achieve in adulthood. This appears to be in line with previous research on grammaticalizing constructions, which has shown (i) that the adoption of innovative features is constrained

by age and (ii) that adoption is further complicated when the incoming features are disruptive (Anthonissen and Petré 2019).

The longitudinal analysis of the NCI concentrated on changes in the construction's semantic-pragmatic function, thereby covering more qualitative aspects of constructional change. Instances of the NCI construction were classified into two main usage types (evidential NCI vs. modalized NCI) and examined longitudinally. At the collective level, the relative distribution of these two usage types gradually shifted in favor of the evidential NCI (generations 1–3), followed by a period of relative stability (generations 4–5), during which the proportion of evidential/modalized uses stabilized at ca. 0.70/0.30. This semasiological shift was mirrored in the lifespan trajectories of several authors; especially in the first generation, these lifespan shifts were statistically significant (partly because first-generation authors' early data are less categorical than those of later generations). As in the case of the prepositional passive, lifespan changes mostly proceeded in the direction of the collective trend. For lifespan changes that evolved in the opposite direction, several scenarios can be envisaged. Opposite developments may still signal social accommodation if above-average users move toward the generational mean. However, social pressures need not be present. One author's trajectory showed that routinization of lexically specified micro-patterns may be the primary driver of lifespan change.

Even though there was much variation and not all individuals showed clearly discernible trends, several authors continued to participate in constructional change across the adult lifespan. This holds true for token frequency (where rather extreme lifespan changes were attested) as well as distributional shifts in a construction's semasiological potential. Such changes are essentially non-disruptive because they result from ongoing entrenchment processes accumulated over time, typically in response to changes at the aggregate level of language. Conversely, routinization may result in lifespan changes that deviate from population-level dynamics. This suggests that lifespan changes in syntax primarily occur in contexts where associations are either strengthened or weakened. Changes that are more cognitively challenging or leap-like in nature appear to be constrained by age, at least the present study did not find conclusive evidence to the contrary.

9.3.3 Constructional taxonomies

Finally, this work sought to gain insight into the network architecture of linguistic knowledge. Because the special passives share certain functional and formal properties (see Chapter 3), they are predicted to be associated in individual cognition. If speakers' internalized grammars indeed form dynamic associative networks, as

widely assumed in cognitive and usage-based theories of language, traces of how constructions are organized (and reorganized) must be found in usage. Specifically, it was hypothesized that the special passives are cognitively related, and that speakers' individual usage patterns of these passives are therefore more likely to be systematically correlated than to diverge.

As detailed in Chapter 8, these predictions were largely borne out. Corpus-derived statistics showed strong degrees of grammar-internal coherence. For instance, authors who use the prepositional passive frequently also tend to use the NCI construction frequently, and those exhibiting lower average frequencies tend to do so for both construction types. By taking repeated snapshots of authors' usage patterns across time, it was also possible to establish whether closely associated constructions develop in tandem. Overall, the special passives were found to be persistently associated across the lifespan, though it could not be established that this persistent association reflects reciprocal adaptation ('coevolution'). The intra-class correlation coefficient furthermore confirmed that data points taken from a given individual strongly resemble each other. That is, much of the variation in usage not explained by other factors (construction type, age and their interaction) resulted from differences *between* authors; usage *within* authors tended to be highly correlated.

However, the longitudinal data also uncovered a pattern of dissociation that recurred in 4 of the 30 sampled EMMA authors. In these authors, the special passives started out with relatively similar frequencies of occurrence, but increasingly diverged over time. This effect is induced by a significant lifespan increase of the prepositional passive against relatively stable use of the NCI. Further analysis indicated that these patterns of dissociation likely reflect long-term diachronic changes in the usage profiles of the two special passives. For example, the correlation between the two passives was found to be weaker in later-born generations than in earlier-born generations, indicating that the special passives came to be less strongly associated in individual minds during the period of investigation. I accounted for this subtle divergence by discussing two major interrelated processes: (i) how semantic-pragmatic factors motivate the use of the special passives and (ii) how frequency affects various types of cognitive associations (symbolic, paradigmatic, syntagmatic and pragmatic). Together, these analyses explain why the special passives are systematically associated in individual usage, but become more dissociated in the population diachronically.

9.4 Outlook

When you are in the business of doing research, it is not uncommon to find that the results raise more questions than they answer. The present study is certainly no exception, and has at times only touched on issues that deserve closer attention. I would like to conclude this book by highlighting a number of avenues that could be explored in future studies, hoping that the results presented in this work can serve as a useful point of departure.

One area of research that holds great promise for constructionist and usage-based theories of language is the study of lifespan change. While several facets of linguistic malleability have been uncovered, research into this topic is still in its infancy and further study is necessary to corroborate and generalize the findings, in particular regarding the constraints on qualitative or structural aspects of change. An important limitation of the present study is that the data for the special passives only pertain to later stages of their spread. This means that the special passive constructions were likely acquired before adulthood and that any changes past adolescence represent modifications of the existing schema. It will have to be clarified by follow-up research to what extent lifespan change is involved in incipient grammaticalization, i.e. the emergence of *new* schemas.

It is also to be expected that the longitudinal study of language in individuals will benefit greatly from recent and anticipated advances in available resources. The EMMA corpus, for instance, builds on the results of extensive digitization projects and online resources, which have made available a rich set of naturalistic data that can be exploited for the quantitative study of micro-level variation and change. However, historical corpora rely on the written record, in which formal registers tend to be overrepresented. With millions of people now building an online presence over long periods of time (e.g. by blogging or posting on YouTube), new possibilities for longitudinal research are opening up (provided, of course, ethical and legal guidelines are adhered to). In particular, carefully compiled social media corpora may complement existing research by providing more spontaneous samples of language use (e.g. tweets, Facebook and blog posts, YouTube videos), which could help researchers uncover traces of real-time change and further define the role of social connections in change.

Another limitation of the present work is the rather narrow focus of the linguistic patterns that were investigated. While semantically and/or formally related patterns were reviewed in the theoretical chapters (especially Chapters 3 and 4), the corpus-based analyses presented in Chapters 6–8 were restricted to the two special passives. A follow-up study taking into account other interrelated patterns (regular passives, *get*-passives and recipient passives) would therefore be wel-

come and might be particularly revealing regarding the topic of constructional taxonomies (see Chapter 8).

Despite these limitations, this work is one of the first large-scale empirical studies to systematically link individual- and community-based perspectives in language change, thereby elaborating the more generic portrayal of language as a complex adaptive system. To return to Denison's questions raised at the beginning of this chapter, we may conclude that language change originates in the complex interaction of individual and social processes. Most of the time, these components are studied separately and the answers we find will be determined by the perspective we take. Exploring the language of individuals offers rich context, but leads to increasing complexity. When language is viewed as a social phenomenon, regularities emerge, on the basis of which we can make predictions. However, such macro-level descriptions are a simplified version of reality and conceal a great deal of variability, both structured and random, at lower levels in the system. By studying individuals in their larger contexts, at various levels of abstraction, the present study has taken initial steps to explore the interaction between the various components of a complex adaptive system. Needless to say, much more work needs to be done. With the many-to-many relationships that exist in a system as complex as language, we inevitably find ourselves like the blind men describing an elephant. However, by combining different aspects and methodologies, we are starting to connect the pieces.

10 Appendix

10.1 The EMMA corpus

10.1.1 Fact sheet

- Project leader: Peter Petré
- Compilers: Peter Petré, Odile A. O. Strik, Lynn Anthonissen, Sara Budts, Enrique Manjavacas, William Standing, Emma-Louise Silva
- Volunteers: Maria De Graef, Lutgarde De Haeck (main contributors), Diane Koek, BA and MA students from the University of Antwerp
- Funding: H2020 – European Research Council (Project ID 639008)
- Access and license: The corpus can be obtained from https://www.uantwerpen.be/en/projects/mind-bending-grammars/emma-corpus. It has been released under a Creative Commons Attribution-ShareAlike 4.0 International License.
- Time of compilation: 2015–2018
- Released: 2018 (version 1.0)
- Size: 90 million words (inclusive non-English text); 88.5 million (English only)
- Number of texts/samples: 13,750
- Language: English
- Period: 1623–1757

10.1.2 Main sources

ECCO = *Eighteenth Century Collections Online*. https://gale.com/primary-sources/eighteenth-century-collections-online.

ECCO-TCP = *Eighteenth Century Collections Online – Text Creation Partnership*. https://textcreationpartnership.org/tcp-texts/ecco-tcp-eighteenth-century-collections-online.

EEBO = *Early English Books Online*. http://eebo.chadwyck.com.

EEBO-TCP = *Early English Books Online – Text Creation Partnership*. https://textcreationpartnership.org/tcp-texts/eebo-tcp-early-english-books-online.

Evans-TCP = *Evans Early American Imprints – Text Creation Partnership*. https://textcreationpartnership.org/tcp-texts/evans-tcp-evans-early-american-imprints.

https://doi.org/10.1515/9783110725841-010

10.2 The prepositional passive

Tab. 10.1: Rate of change in normalized frequency over 10-year periods

	Estimate	SE	*t*-value	*p*-value
(Intercept)	148.93	30.52	4.88	<0.001 (***)
period	25.35	3.58	7.07	<0.001 (***)
Overall fit	R^2=0.81; Adj. R^2=0.79; p<0.001			

Tab. 10.2: $Model_{DP}$ 1: DP_{NORM} ~ BIRTH DATE

	Estimate	SE	*t*-value	*p*-value
(Intercept)	1.43	1.11	1.30	0.20
period	0.001	0.001	-1.03	0.31
Overall fit	R^2=0.02; Adj. R^2=0.001; p=0.31			

Tab. 10.3: ANOVA $Model_{DP}$ 1 and 2

	Res. Df	RSS	Df	Sum of Sq	F	*p*-value
1	48	0.56				
2	46	0.37	2	0.19	11.91	<0.001 (***)

Tab. 10.4: $Model_{DP}$ 3: DP_{NORM} ~ BIRTH DATE + GENRE

	Estimate	SE	*t*-value	*p*-value
(Intercept)	3.33	1.02	3.26	0.002 (**)
period	-0.002	0.001	-2.89	0.006 (**)
genre = religious	-0.15	0.03	-5.35	<0.001 (***)
Overall fit	R^2=0.45; Adj. R^2=0.43; p<0.001			

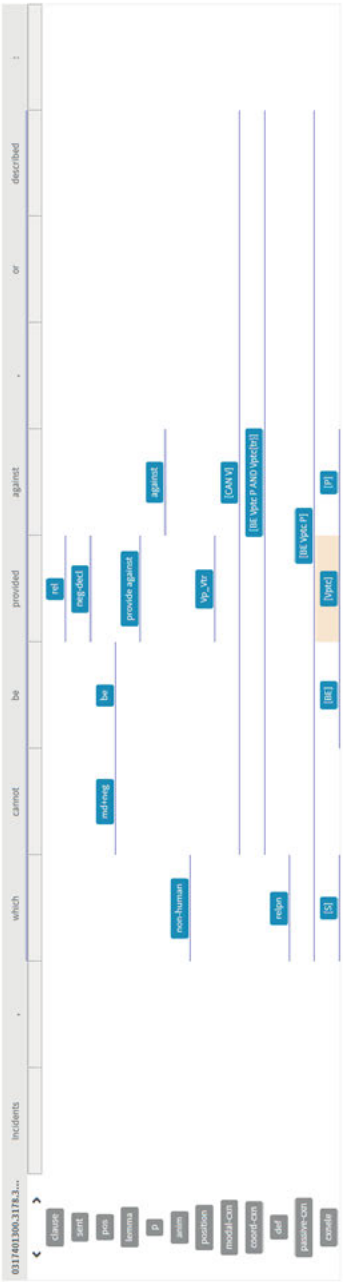

Fig. 10.1: Example annotation in CosyCat

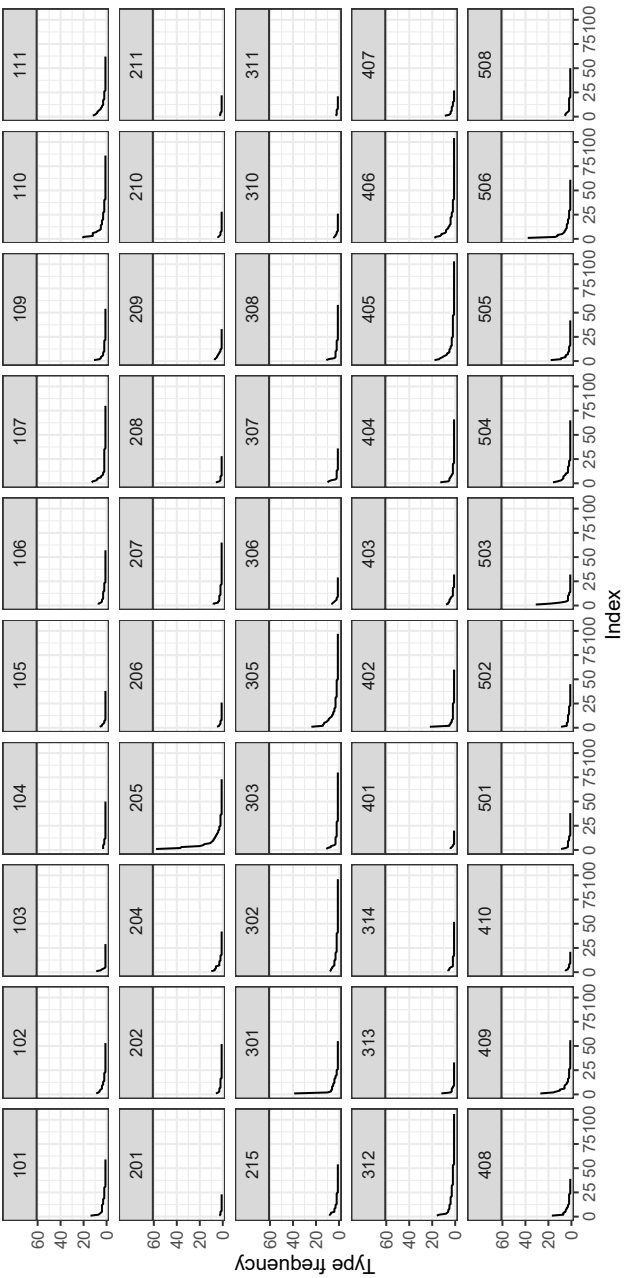

Fig. 10.2: Individual distributions of type frequencies

10.3 The nominative and infinitive

10.3.1 List of attested PCU verbs

say (4,178), *suppose* (1,004), *think* (819), *find* (631), *know* (538), *observe* (282), *see* (263), *declare* (200), *pretend* (192), *presume* (158), *prove* (158), *suspect* (151), *understand* (147), *report* (139), *judge* (136), *acknowledge* (127), *confess* (126), *esteem* (115), *conceive* (103), *hear* (102), *affirm* (88), *believe* (80), *grant* (65), *reckon* (64), *hold* (63), *conclude* (59), *deny* (52), *discover* (51), *expect* (48), *repute* (43), *describe* (41), *imagine* (41), *assert* (36), *take* (34), *define* (30), *represent* (30), *adjudge* (28), *compute* (28), *interpret* (25), *determine* (23), *note* (21), *perceive* (21), *admit* (20), *record* (20), *construe* (19), *express* (18), *reveal* (18), *apprehend* (17), *agree* (16), *discern* (15), *propose* (13), *find out* (12), *deem* (11), *demonstrate* (9), *guess* (8), *decree* (7), *fancy* (7), *fear* (7), *overhear* (7), *swear* (7), *argue* (6), *feel* (6), *proclaim* (6), *agree upon* (5), *approve* (5), *conjecture* (5), *consider* (5), *detect* (5), *pronounce* (5), *assume* (4), *confirm* (4), *profess* (4), *avow* (3), *estimate* (3), *hope* (3), *manifest* (3), *presuppose* (3), *regard* (3), *suggest* (3), *translate* (3), *accept* (2), *calculate* (2), *certify* (2), *deduce* (2), *establish* (2), *experience* (2), *infer* (2), *misapprehend* (2), *misinterpret* (2), *prophesy of* (2), *propound* (2), *show* (2), *take notice of* (2), *try* (2), *agree on* (1), *allege* (1), *concede* (1), *convict* (1), *evidence* (1), *gather* (1), *intimate* (1), *mistake* (1), *oversee* (1), *predict* (1), *present* (1), *prophesy* (1), *receive* (1), *signify* (1), *state* (1), *surmise* (1), *think of* (1), *whisper* (1)

10.3.2 Statistical analysis of reference in evidential NCIs

Table 10.5 presents the results of the Fisher test for independence (two-tailed) concerning the use of overt reference in evidential *say*-NCIs versus NCIs with other verbs (see the discussion in Chapter 7, Section 7.4). Only authors for whom the category reference is attested at least once are included. The fourth column specifies the total number of evidential NCIs, the fifth column specifies how many of them have an overt reference, and the sixth column in how many of the overt reference cases the PCU verb is *say* (as opposed to any other PCU verb).

Tab. 10.5: Overt reference in evidential NCIs

ID	Author	Genre	Evid. (n)	> Ref.	> *say*	*p*-value
104	Fuller	religious	506	9	8	0.006 (**)
105	Milton	narrative	103	2	1	0.428
110	Owen	religious	1,533	386	357	<0.001 (***)
207	Bunyan	religious	274	66	62	0.018 (*)
209	Tillotson	religious	90	5	3	0.649
302	Whitehead	religious	204	24	18	<0.001 (***)
305	I. Mather	religious	487	160	153	<0.001 (***)
313	Salmon	other	767	2	2	0.501
402	Wake	religious	184	10	6	0.004 (**)
406	C. Mather	religious	72	1	0	1.000
409	Whiston	religious	168	2	2	0.162
506	Hoadly	religious	192	8	3	0.141

10.3.3 Statistical analysis of lifespan change

Tab. 10.6: Distributional shift in usage types

ID	Author	*z*-value	τ est.	*p*-value
103	Davenant	-1.40	-0.29	0.162
104	Fuller	-3.47	-0.13	<0.001 (***)
105	Milton	3.82	0.30	<0.001 (***)
106	Taylor	-3.22	-0.11	0.001 (**)
110	Owen	4.50	0.09	<0.001 (***)
111	L'Estrange	3.09	0.16	0.002 (**)
201	Rog. Boyle	0.47	0.08	0.635
204	Fox	0.25	0.03	0.805
205	Rob. Boyle	0.72	0.02	0.470
207	Bunyan	1.74	0.09	0.081 (.)
209	Tillotson	0.89	0.06	0.373
210	Dryden	0.49	0.03	0.627
302	Whitehead	-1.30	-0.07	0.194
305	I. Mather	3.10	0.12	0.002 (**)
308	Crouch	-3.04	-0.12	0.002 (**)

Tab. 10.6 – continued

ID	Author	*z*-value	τ est.	*p*-value
310	Behn	-0.58	-0.07	0.560
311	Crowne	0.48	0.10	0.628
313	Salmon	-1.27	-0.04	0.204
401	D'Urfey	0.50	0.07	0.620
402	Wake	-0.72	-0.04	0.472
403	Dennis	1.71	0.10	0.086 (.)
406	C. Mather	0.36	0.03	0.722
408	Swift	-0.73	-0.07	0.464
409	Whiston	-0.29	-0.02	0.773
501	Cibber	-1.36	-0.21	0.175
502	Steele	0.48	0.05	0.631
503	Addison	-2.18	-0.24	0.029 (*)
504	Oldmixon	-1.25	-0.08	0.210
506	Hoadly	1.53	0.07	0.126
508	Jacob	-0.94	-0.06	0.347

10.4 Related publications

The present monograph is a revised version of the following dissertation, submitted and defended in 2020 at the University of Antwerp and the Ludwig-Maximilians-Universität München: 'Anthonissen, Lynn. 2020. *Special passives across the lifespan: cognitive and social mechanisms*. University of Antwerp & LMU Munich dissertation. 397 p.' Several ideas and some results presented in this book have appeared, in one form or the other, in the journal articles and book chapter listed below. The relevant sections of the book that draw on this material are listed in brackets. Additionally, the source material of any figures that have been reprinted has been credited in the text.

Anthonissen, Lynn. 2019. Constructional change across the lifespan: The nominative and infinitive in early modern writers. In Kristin Bech & Ruth Möhlig-Falke (eds.), *Grammar – discourse – context: Grammar and usage in language variation and change*, 125–156. Berlin: De Gruyter Mouton. [relates to Sections 1.1, 4.3, and parts of Chapter 7]

Anthonissen, Lynn. 2020. Cognition in construction grammar: Connecting individual and community grammars. *Cognitive Linguistics* 31(2). 309–337. [relates to parts of Chapters 6, 9, Sections 2.4.1 and 4.2]

Anthonissen, Lynn & Peter Petré. 2019. Grammaticalization and the linguistic individual: New avenues in lifespan research. *Linguistics Vanguard* 5(s2). 1–12. [relates to parts of Section 2.4.2]

Petré, Peter & Lynn Anthonissen. 2020. Individuality in complex systems: A constructionist approach. *Cognitive Linguistics* 31(2). 185–212. [relates to parts of Sections 2.2, 2.3, 8.3.1]

Petré, Peter, Lynn Anthonissen, Sara Budts, Enrique Manjavacas, Emma-Louise Silva, William Standing & Odile A. O. Strik. 2019. Early Modern Multiloquent Authors (EMMA): Designing a large-scale corpus of individuals' languages. *ICAME Journal* 43. 83–122. [relates to parts of Chapter 5]

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Anthonissen, Lynn. 2020b. *Special passives across the lifespan: Cognitive and social mechanisms*. University of Antwerp & LMU Munich dissertation.

Anthonissen, Lynn & Peter Petré. 2019. Grammaticalization and the linguistic individual: New avenues in lifespan research. *Linguistics Vanguard* 5(s2). 1–12.

Anthonissen, Lynn & Peter Petré. 2020. Mind-bending grammars: Language variation and change across the lifespan. In Christina Sanchez-Stockhammer, Franziska Günther & Hans-Jörg Schmid (eds.), *Language in mind and brain. Multimedial proceedings of the workshop held at LMU Munich, December 10–11, 2018*. Munich: Open Access LMU.

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