

Parataxis and hypotaxis in the history of English

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Abstract

The claim that parataxis precedes hypotaxis in the history of English is an idea with a long pedigree; however, the empirical evidence for it is limited. In this chapter, I revisit the question of parataxis and hypotaxis diachronically, focusing on two different claims. The first is the idea that finite clausal complementation emerged from clausal juxtaposition. Following Axel-Tober (2012, 2017), I argue that this scenario is implausible. The second is the idea that the proportion of subordinate clauses increases gradually over time. This quantitative claim can be assessed using parsed historical corpora. No gradual increase can be observed; rather, we see substantial genre-conditioned variation. I conclude that the idea of parataxis preceding hypotaxis might be ready for retirement.

Keywords: parataxis, hypotaxis, clause structure, reanalysis, complementation

1. Introduction

The attempt by historians of the English language to give order to the chaos we at first sight seem to encounter in historical data has led to a handful of organizing narratives that recur over and over again. Typically, these are based around binary oppositions, and a directional development from one pole to another: synthetic to analytic, grammatical to lexical. While language historians are usually careful to emphasize that such transitions are continuous rather than abrupt, and that there is substantial fuzziness—for instance, Old English is not at absolute zero on the analyticity scale—it is rarer to see the organizing logic of such narratives challenged directly.¹

This paper attempts such a challenge, focusing on a venerable opposition: parataxis and hypotaxis. The idea that we see a development from parataxis to hypotaxis in the history of English remains widespread in textbook treatments: for instance, Baugh and Cable (2013), a classic of the genre, state that in the historical record “the loose association of clauses (parataxis) gives way to more precise indications of logical relationship and subordination (hypotaxis)” (2013: 238). Similarly, Mitchell’s (1985) reference work on Old English syntax approvingly quotes Small (1924: 125): “It may be laid down as a general principle that in the progress of language parataxis precedes hypotaxis.”

In any discipline it’s worthwhile to revisit such narratives every now and then, to check that our foundations are sound. We now have methods and types of data that were not available in the nineteenth century, when the parataxis-to-hypotaxis narrative was first becoming mainstream, nor in the early twentieth, when it was being repeated unquestioningly. And in any discipline ideology may sometimes prevail in the absence of evidence (or even sometimes in

¹ An exception is found in Szmrecsányi (2012, 2016). These papers take on the old chestnut of analyticity and syntheticity using quantitative measures applied to the Penn Parsed Corpora of Historical English and show that the traditional narrative is only partly supported.

the face of it). The aforementioned quotation from Small (1924: 125) continues, in a sentence that Mitchell wisely omits: “The former [i.e., parataxis–GW] is associated with the uncultivated mind; the latter [hypotaxis–GW], with the cultivated mind of civilized peoples.” In a similar vein, Andrew (1940: 87) describes early Old English as characterized by “simply a lack of grammatical subordination such as we find in the language of children and some primitive people”. In view of the demonstrable association of the parataxis-to-hypotaxis narrative with discredited, culturally chauvinistic positions such as these in some instances, it’s all the more desirable to establish whether it receives any empirical support.

There are many different versions of the parataxis-to-hypotaxis narrative, and addressing all of them would not be feasible in a chapter of this length. As Harris and Campbell (1995: 284) trenchantly observe, “in approaching the question of whether hypotaxis develops out of parataxis we encounter the problem that different linguists have in mind different ideas of parataxis, and that at least some of them are vague”. In general terms, parataxis is usually understood as a loose relation—or even no relation at all—between linguistic units; two formally unconnected utterances (*I am thinking. Jane left*) would be the prototypical case of a paratactic relation. Hypotaxis is a closer relation between linguistic units, in which one contains the other; the prototypical case of a hypotactic relation is finite clausal embedding (*I think that Jane left*). But how other types of relation, such as non-finite subordination, relative clauses, coordination, adjunction, non-clausal embedding (e.g., possessor recursion), and so on, fit into the space between parataxis and hypotaxis is not always so clear, and seems to vary between authors. Even given a clear working definition of parataxis and hypotaxis, moreover, the broad family of parataxis-to-hypotaxis narratives contains many different kinds of claims which need to be evaluated with respect to many different kinds of evidence.

This paper will focus on two specific parataxis-to-hypotaxis claims. The first, discussed in §2, is a claim about reanalysis: the idea that finite clausal complementation emerged from

clausal juxtaposition in the history of English, such that two juxtaposed sentences of the type *[I think that.] [Jane left]* were reanalysed as a single sentence containing a clausal complement, *[I think [that Jane left]]*. Following Axel-Tober (2012, 2017), I argue that this scenario is implausible for several reasons. The second idea I will critically examine, in §3, is a claim about frequency: the idea that the proportion of subordinate clauses increases gradually over time in the history of English. This can be addressed empirically using parsed historical corpora, and no straightforward diachronic tendency can be observed. Section 4 is a brief summary and conclusion.

2. Does finite clausal complementation emerge from juxtaposition?

2.1 That-complementation in English and clause fusion

The standard story for the emergence of finite complement clauses in the history of English dates back at least to Behaghel (1877, 1928: 130) and Paul (1920: 241); it is recently retold in Hopper & Traugott (2003: 190–194) and Roberts & Roussou (2003: 110–120).

As is well known, the complementizer *that*, introducing finite complement clauses, and the demonstrative pronoun *that* are homophonous in English.² This state of affairs goes back to our earliest textual records: in Old English, *þæt* is found as both a complementizer and a neuter demonstrative pronoun. Both usages can arguably be seen in (1).

- (1) *Ða on morgenne gehierdun þæt þæs cyninges þegnas*
 when/then in morning heard-PL DEM DEM:GEN king's thanes

² Or, more accurately, they are written the same way, and *can* be pronounced the same way. The pronunciation [ðəʔ] or [ðət], with schwa, is virtually restricted to the complementizer.

þe him beæftan wærun þæt se cyning ofslægen wæs, þa ridon

who him behind were COMP the king slain was then rode

hie þider.

they thither

‘When in the morning the king’s thanes who had been left behind heard that he had been killed, then they rode up there.’ (ChronA (Plummer) 755.23; Hopper & Traugott 2003: 191, their (38))

The first *þæt* here is a pronoun with cataphoric reference, pointing forward to the clause ‘that the king had been killed’. The second *þæt* is a complementizer introducing that same clause.³ For Hopper & Traugott, such clauses do not unambiguously indicate complementizer status for *þæt*, but this is different in examples such as (2).

(2) *And þæs us ne scamað na, ac þæs us*

And DEM:GEN we:ACC not shames never, but DEM:GEN we:ACC

scamað swyþe þæt we bote aginnan swa swa bec tæcan.

shames much COMP we atonement begin so as books teach

‘And we are not at all ashamed of that, but we are ashamed of this: of

beginning atonement in the way that the books teach.’ (c. 1010, Whom 20.3

160; Hopper & Traugott 2003: 192, their (42))

Here, the clause beginning with *þæt* cannot be an argument of the verb *scamað*, since this verb requires the shame-stimulus to occur in the genitive case in Old English, and *þæt* can only be a

³ For Hopper & Traugott (2003: 177–178, 181–184), parataxis and hypotaxis are not the two endpoints of a continuum. Instead, the endpoints are parataxis and subordination. Hypotaxis, under their conception, is an intermediate state, in which there is a syntactic relationship of dependency between one unit and another but in which neither is completely contained (embedded) within the other. In their retelling of the story, then, English complement clauses have progressed *beyond* hypotaxis. Their distinction between hypotaxis and subordination is, however, not important for present purposes, and I will treat what they call subordination as a type of hypotaxis.

nominative or accusative form. We are therefore forced to conclude that it must be a complementizer in (2).

Clauses like (1) are not the input to reanalysis, for Hopper and Traugott (2003). Instead, “the complementizer *þæt* ... was reanalyzed from a pronoun which was a constituent of the matrix clause to a complementizer that had a whole clause within its scope” (2003: 192). That is, originally, the two clauses were entirely independent and paratactic, and the new complementizer jumps a clause boundary as part of the fusion of these two independent clauses into a structure of subordination. The bridging context for this reanalysis must, then, have been something like the structure in (3) (my interpretation), with *þæt* in the accusative (or potentially nominative) case.

(3) *We gehierdun þæt. Se cyning ofslægen wæs.*

we heard that:ACC the king killed was

‘We heard that. The king was killed.’

2.2 *That-complementation in English: Problems with the standard scenario*

The scenario outlined in §2.1 runs into a number of insuperable problems, however, as has been shown by Axel-Tober (2009, 2012: Chapter 2, 2017). This important work has not received enough attention in English historical linguistics to date, perhaps because the main English-language presentation of the key ideas (Axel-Tober 2017) is framed with respect to the history of German.⁴ As she notes, however, in her diachronic scenario (to be discussed in §2.3 of this paper), the crucial change that led to the development of the complementizer plausibly occurred before the Proto-West-Germanic stage (2017: e57), as the early West Germanic languages all

⁴ van Gelderen (2021: 54) is a welcome exception that takes Axel-Tober’s alternative scenario into account.

behave alike—or potentially even earlier. This brings the story into the (pre)history of English, and hence I present and expand on Axel-Tober’s critique and arguments here in relation to Old English.

The first objection to the standard scenario is that there is little or no evidence for the all-important bridging structure in (3). In fact, none of the early Germanic languages feature sequences that look remotely like (3). It’s possible that they existed in the prehistory of Germanic and disappeared at a later stage, but there is no evidence or independent motivation for this assumption.

A related problem is that the second clause in (3) features verb-late constituent order. While verb-late independent clauses did exist in Old English (Koopman 1995), on the whole, there is a clear asymmetry between independent and embedded clauses in early Germanic.⁵ In generative terms, V-to-C movement, leading to the verb surfacing in or near clause-initial position, must have been innovated in (at least some types of) independent clauses as early as Proto-Germanic (Eythórsson 1995; Walkden 2014: Chapter 3). By contrast, there is no robust evidence for V-to-C movement in embedded clauses in the earliest textual records of any of the Germanic languages (Walkden & Booth 2020). It is thus very likely that a clause-type asymmetry between independent clauses (verb-early) and embedded clauses (verb-late(r)) is at least as old as Germanic itself. If so, this casts doubt on the idea that an independent clause could have been reanalysed as an embedded clause: the position of the verb would have provided formal evidence against the new analysis for the hearer.

⁵ This is true even of North Germanic, at least as regards the early poetic records: see Thorgeirsson (2012) for discussion and references. Note that the claim is not that we can *always* distinguish independent and embedded clauses in these languages, something which is clearly untrue (see the discussion in §3.1). Rather, in many cases we can indeed make such a distinction through a combination of constituent order and context, and statistically the asymmetry is clearly in the direction of the verb occurring earlier in independent clauses than in embedded clauses (see, e.g., Pintzuk 1999). Alongside clause type, information structure clearly plays a role in governing verb position in early English: see Bech (2001) and van Kemenade & Westergaard (2012) among others, and Walkden (2014: Chapter 3) for discussion in the broader Germanic context.

A third objection relates to the grammaticalization pathway that is supposed to be at work in the standard scenario. Although they accept this scenario, and therefore the pathway from demonstrative to complementizer, in their catalogue of grammaticalization paths, Heine & Kuteva (2002: 106–107) caution that their only robust examples are from Germanic, and comment that “more cross-linguistic data are required to establish that the present grammaticalization represents a more general phenomenon”. The trajectory from demonstrative to complementizer in the early Germanic languages required by the standard scenario could thus be unique among the world’s languages.

A fourth objection to the standard scenario is that it involves radical syntactic rebracketing: two entirely independent clauses are reanalysed as a single unit. While this kind of reanalysis was the bread and butter of twentieth-century historical syntax, many of the empirical domains in which radical rebracketing has been posited have been shown to submit to other analyses that better account for the evidence: three such domains in the history of English are *for ... to* infinitivals, the *going to* future, and the *have*-perfect (De Smet 2009; Petré 2019; Whitman 2012). A diachronic scenario that does not invoke radical rebracketing is arguably superior to one that does.⁶

2.3 That-complementation in English: An alternative scenario

Axel-Tober suggests that, rather than a *demonstrative* pronoun, the origin of the complementizer introducing complement clauses is to be found in the *relative* pronoun. It is well known that *þæt* and other historically demonstrative forms also function as relative pronouns in the early West Germanic languages. Recall examples such as (1) from Hopper and

⁶ Weiß (2021), while acknowledging that many rebracketing-based explanations have been wrong, makes the case that rebracketing can occur, but only under specific conditions, such as when a mismatch obtains between prosodic and syntactic structure in the input.

Traugott (2003), in which a ‘cataphoric’ *þæt* anticipates a clause also introduced by *þæt*. These structures can be analysed as correlatives: the extraposed relative clause has as its head the pronoun in the main clause. All we need as a bridging context for reanalysis is a type of example similar to (1) in which there is no overt cataphoric demonstrative pronoun at all. Such examples are amply attested: see (4) and (5), both from the YCOE (Taylor et al. 2003).

- (4) *Ðæt geworht is was lif on him sylfum*
 that worked is was life in him self
 ‘That which was created was life in himself’ (coaelhom,+AHom_1:33.17)
- (5) *for ðamþe ge gebiddað þæt ge nyton*
 because you worship that you NEG:know
 ‘because you worship that which you do not know’
 (coaelhom,+AHom_5:44.710)

The existence of such examples is unsurprising given that early Germanic robustly allowed both subjects and objects to be omitted (Walkden 2014: Chapter 5). If Axel-Tober is correct, examples like (4) and (5), with *þæt*-relatives, could (with appropriate verbs) be analysed as involving clausal complementation instead, with *þæt* playing the role of the complementizer.⁷

Axel-Tober’s proposal evades all of the objections faced by the standard scenario. First, examples of the bridging context required for reanalysis are amply attested (e.g., (4) and (5)), unlike the bridging context in (3) required by the standard scenario. Secondly, there is no reanalysis from independent clause to embedded clause; instead, one type of embedded clause is reanalysed as another. Thus, constituent order (and in particular the position of the verb) does

⁷ Axel-Tober in fact posits an intermediate step: the relative pronoun is first reanalysed as a relative complementizer, then the relative clause is reanalysed as a complement clause (e.g., 2017: p. e55). Given that in the Old English textual record *þæt* as an invariant relative particle surfaces only rarely and in late texts (Traugott 1992: 227), whereas *þæt* as a complementizer surfaces early and often, the intermediate step can and should probably be dispensed with, but this detail is not crucial.

not pose a problem for Axel-Tober's proposal. Thirdly, the grammaticalization pathway from relative pronoun to complementizer is extremely well attested in the histories of various languages around the world, including Greek (Nicholas 1998), Chalcatongo Mixtec, Thai, Biblical Hebrew (Heine & Kuteva 2002: 254)—unlike the pathway from demonstrative to complementizer.⁸ Fourthly and finally, Axel-Tober's proposal has no need for radical syntactic rebracketing.

We can conclude that the scenario proposed by Axel-Tober (2017), in which relative clauses are reanalysed as complement clauses and the complementizer has its ultimate origin as a relative pronoun, fares better in every respect than the standard scenario in which parataxis is reanalysed as hypotaxis (cf. also Weiß 2020: 50).

3. Do subordinate clauses become more frequent over the history of English?

The claim addressed in §2 is a claim about categorial reanalysis: a particular paratactic structure is reanalysed as a hypotactic structure. This is not the only version of the parataxis-to-hypotaxis narrative out there, however. A different type of claim concerns the frequency of paratactic as opposed to hypotactic structures in usage. Here the claim is not that new types of hypotactic structure arose during the historically attested period, but rather that the token frequency of existing hypotactic structures increased over time. In a section on “Writing and complex hypotactic syntax”, Dąbrowska (2015: 230) puts it as follows:

⁸ Moreover, in X'-theoretic terms, the development from relative pronoun (in Spec,CP) to complementizer (in C) is an instance of spec-to-head reanalysis—an extremely common trajectory across categories and languages (Roberts & Roussou 2003; van Gelderen 2004, 2011).

Further telling evidence can be gleaned from historical data. The earliest written texts in a language are usually highly paratactic ... while later texts typically show more use of subordination. The historical increase in the frequency of subordination is gradual.

This type of claim is necessarily a quantitative one, and can only be assessed by means of historical corpus data. If Dąbrowska's claim is correct for English, we should see an upward trend in the amount of hypotaxis over time.

A similar claim is found in Karlsson (2009: 202): "It is a well-known fact that, mainly due to Latin influences, German and English were syntactically most complex in the seventeenth century". Karlsson's paper is explicitly concerned with clausal embedding. If we interpret syntactic complexity as hypotaxis as opposed to parataxis, and if the claim is correct, we should see the most hypotaxis in the seventeenth century, with more parataxis on either side of this peak.

Neither claim is accompanied by any empirical support. Dąbrowska (2015) cites O'Neil (1977) and Berg (2009) for Old English; Karlsson (2009) cites Jespersen (1967 [1905]: 118) on English. None of these sources provides quantitative evidence for any change in frequency of parataxis and hypotaxis. Yet such evidence is nowadays readily available, and assessing these claims will be the task of this section.

3.1 Frequency of clause types: Sources and methods

To investigate claims about clause types, we need historical corpora from which information about clause type can be readily extracted. For this purpose, the YCOE and the Penn Parsed Corpora of Historical English are ideal. Table 1 gives an overview of these sources.

Table 1. The Penn Parsed Corpora of Historical English

Name	Time period	Word count	Source
York-Toronto-Helsinki Parsed Corpus of Old English Prose (YCOE)	pre-1150	1.5 million	Taylor et al. (2003)
Penn-Helsinki Parsed Corpus of Middle English 2 (PPCME2)	1150–1500	1.2 million	Kroch & Taylor (2000)
Penn-Helsinki Parsed Corpus of Early Modern English (PPCEME)	1500–1720	1.7 million	Kroch et al. (2004)
Penn Parsed Corpus of Modern British English (PPCMBE2)	1710–1914	2.8 million	Kroch et al. (2016)

In these corpora, finite unembedded clauses of any kind—including independent declaratives but also, e.g., coordinated clauses and imperatives—are annotated as IP-MAT.⁹ All kinds of finite embedded clauses, meanwhile, are annotated as IP-SUB, including complement clauses, but also relative clauses, adverbial clauses, and more (see §3.3). All non-finite clauses are annotated as IP-INF. All clauses belong to one of these three categories.

On this basis, we can define a measure, the *hypotaxis level*, that expresses how hypotactic a given text is. The hypotaxis level is simply the proportion of all clauses that are either finite and embedded (IP-SUB) or non-finite (IP-INF):

$$\frac{N_{IP-SUB} + N_{IP-INF}}{N_{IP-SUB} + N_{IP-INF} + N_{IP-MAT}}$$

⁹ Exceptions to this involve exclamatives and unembedded questions, both of which are annotated as IP-SUB (dominated by CP-EXL and CP-QUE respectively). These are not very frequent, and so are not likely to skew the numbers in §3.2 substantially. See the breakdown by narrower clause type in §3.3.

This yields a value of $0 \leq \text{hypotaxis level} < 1$, represented as a percentage in what follows. A text with a hypotaxis level of 0 is one in which only unembedded clauses are found. A text with a hypotaxis level approaching 1, on the other hand, is one in which almost all clauses are embedded. By definition, not all clauses can be embedded, as there has to be at least one matrix clause for them to be embedded into, so no text can have a hypotaxis level of exactly 1.

Results in terms of hypotaxis level are presented in §3.2. The justification for including non-finite clauses in the measure is that non-finite clauses are almost always embedded. In §3.3 I take a more fine-grained look at clause types and visualize non-finite clauses separately.

Each text was assigned a date based on the Penn corpora metadata. Some texts—especially for the early periods—are only dated to a range, e.g., 850–950 or 1125–1175. Since plotting graphs based on these data requires point values, I took the midpoint of the range in such cases (e.g., 900 or 1150). I also assigned a genre to each text, again loosely based on Penn corpora metadata, collapsing more rarely occurring categories in their annotation into broader categories. The genres that survived this process are: bibles, diaries, drama, fiction, legal texts, letters, non-fiction, and sermons. Unsurprisingly, not all genres are represented for all periods due to the nature of the surviving material. Full details of the date and genre assigned to each text, as well as the queries used to retrieve the data from the Penn corpora and instructions on how to replicate the study, can be found in the supplementary materials available at <https://doi.org/10.5281/zenodo.7477013>.

The corpora, and the corpus annotation decisions in particular, do not represent God's truth (Rissanen 1989). Annotation decisions taken in constructing the Penn-Helsinki corpora are intended to facilitate searchability, not to provide a fundamentally correct analysis. Due to the size of the dataset, it was not possible to manually check every example included, so the method here relies on the parsing being 'good enough'. Impressionistically this is the case, but caveats are still in order. As a reviewer points out, it is not always straightforward—especially

in earlier English—to decide whether a clause is embedded or not, since many connectives (e.g., *þa* ‘then/when’) are ambiguous between true subordinators and clause-initial adverbs, and constituent order (e.g., verb position) in Old and Middle English cannot always be relied upon to disambiguate as it can in asymmetric verb-second languages like German and Dutch. The results presented in the following section depend on the assumption that, insofar as errors of this sort (i.e., parsing an unembedded clause as embedded, or vice versa) are made, there is no directionality to them: that is, noise introduced by this kind of parsing error does not systematically skew in favour of embedded or unembedded clauses, but can go in both directions. Readers who are sceptical of this assumption are invited to use the supplementary materials and corpora to check the results for themselves.

Graphs in §3.2 are plotted using `ggplot2` (Wickham 2016) in R. Time is presented on the x axis, and hypotaxis level on the y axis. Texts are represented as points, and their Penn corpus ID is provided. Genre is represented by colour-coding; the size of the points represents the size of the text in terms of total number of clauses of all types.

3.2 *Frequency of clause types: Hypotaxis level results*

Figure 1 presents the hypotaxis levels of texts from the Old English period, that is, from the YCOE.

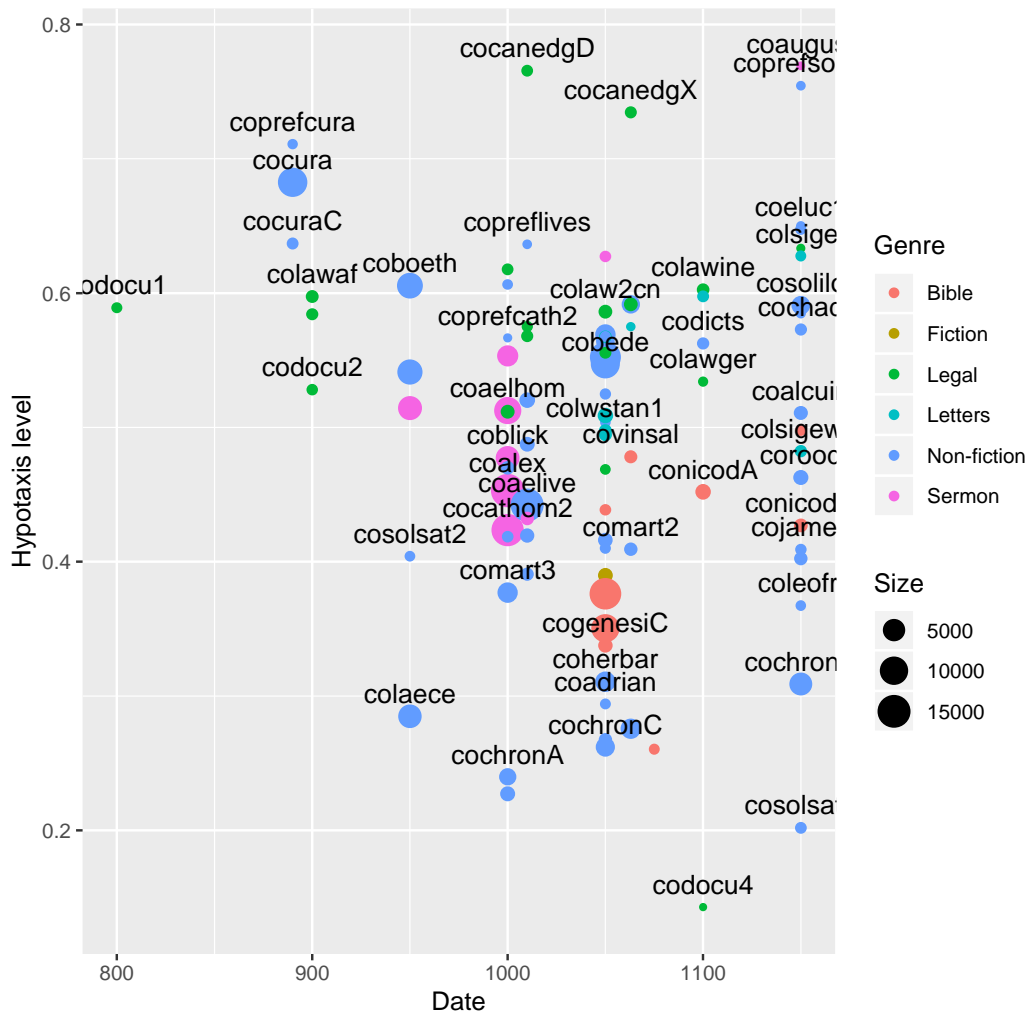


Figure 1. Hypotaxis levels in Old English

Figure 1 does not allow us to conclude very much. There are not many texts from before 950, but there is nothing to lead us to suggest that these texts are any more paratactic than those that come later in the period. Insofar as there are generalizations to be made, these relate to genre rather than date: the two versions of the Canons of Edgar (*cocanedgD*, *cocanedgX*)—ecclesiastical laws—are very hypotactic, for instance. By contrast, bible translations such as the *Heptateuch* (*cootest*) are relatively paratactic. Among non-fiction texts, it is particularly versions of the Old English Chronicle (*cochronA*, *cochronD*, *cochronE*) and medical texts such as Bald’s *Leechbook* (*colaece*), the *Lacnunga* (*colacnu*) and the *Herbarium* (*coherbar*) that are at the lower end of the hypotaxis scale.

For Middle English, also, no effect of time is obvious at a first glance (Figure 2).

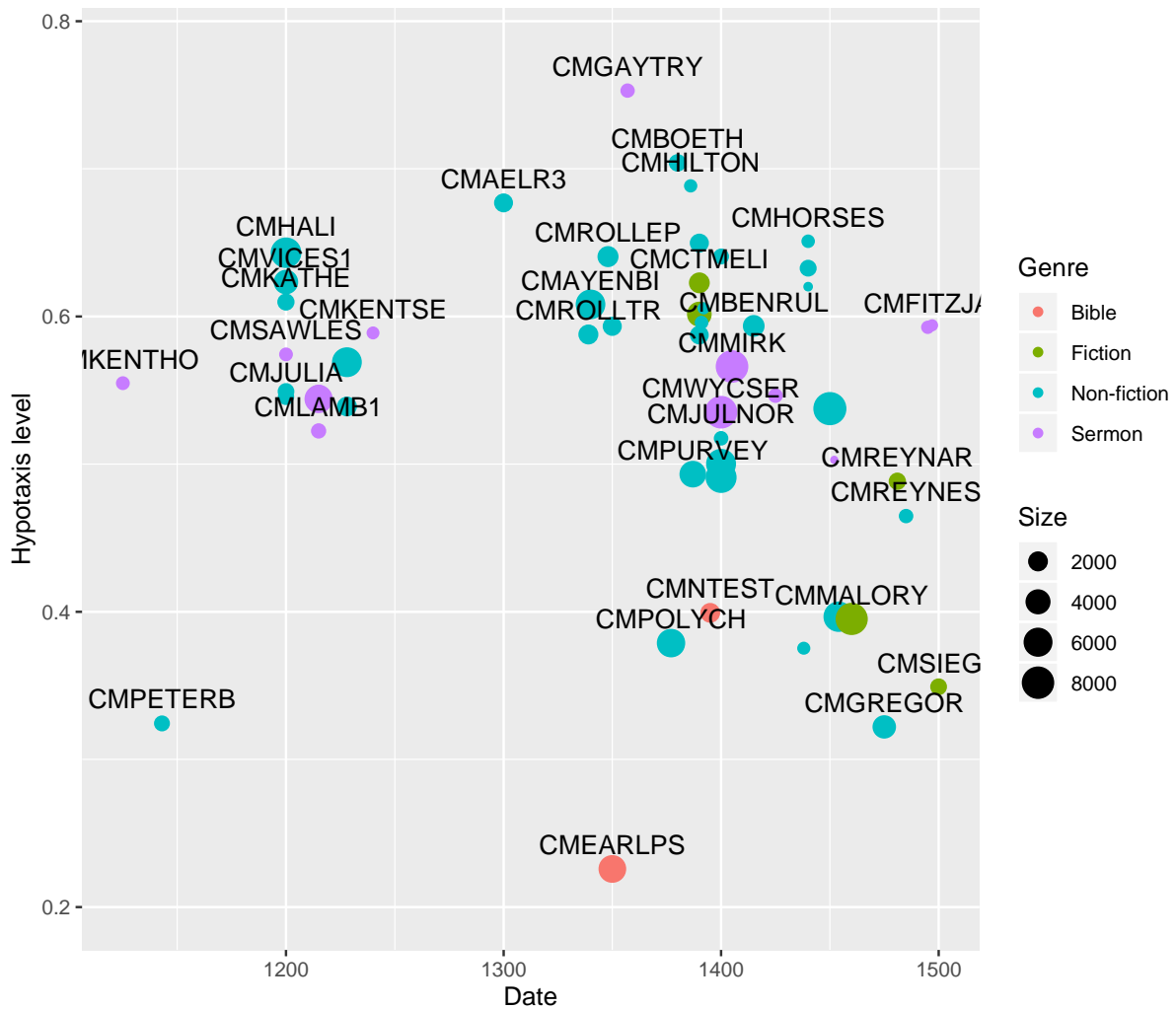


Figure 2. Hypotaxis levels in Middle English

Once again, bible translations, e.g., the Earliest Prose Psalter (cmearlps), are low in hypotaxis, but because of the spread of texts across genres during this period, little more can be said about genre. It is worth noting, though, that the most hypotactic texts during this period are not more hypotactic than the most hypotactic texts during the Old English period.

The Early Modern English period brings with it more texts and more genre diversity, as can be seen in Figure 3.

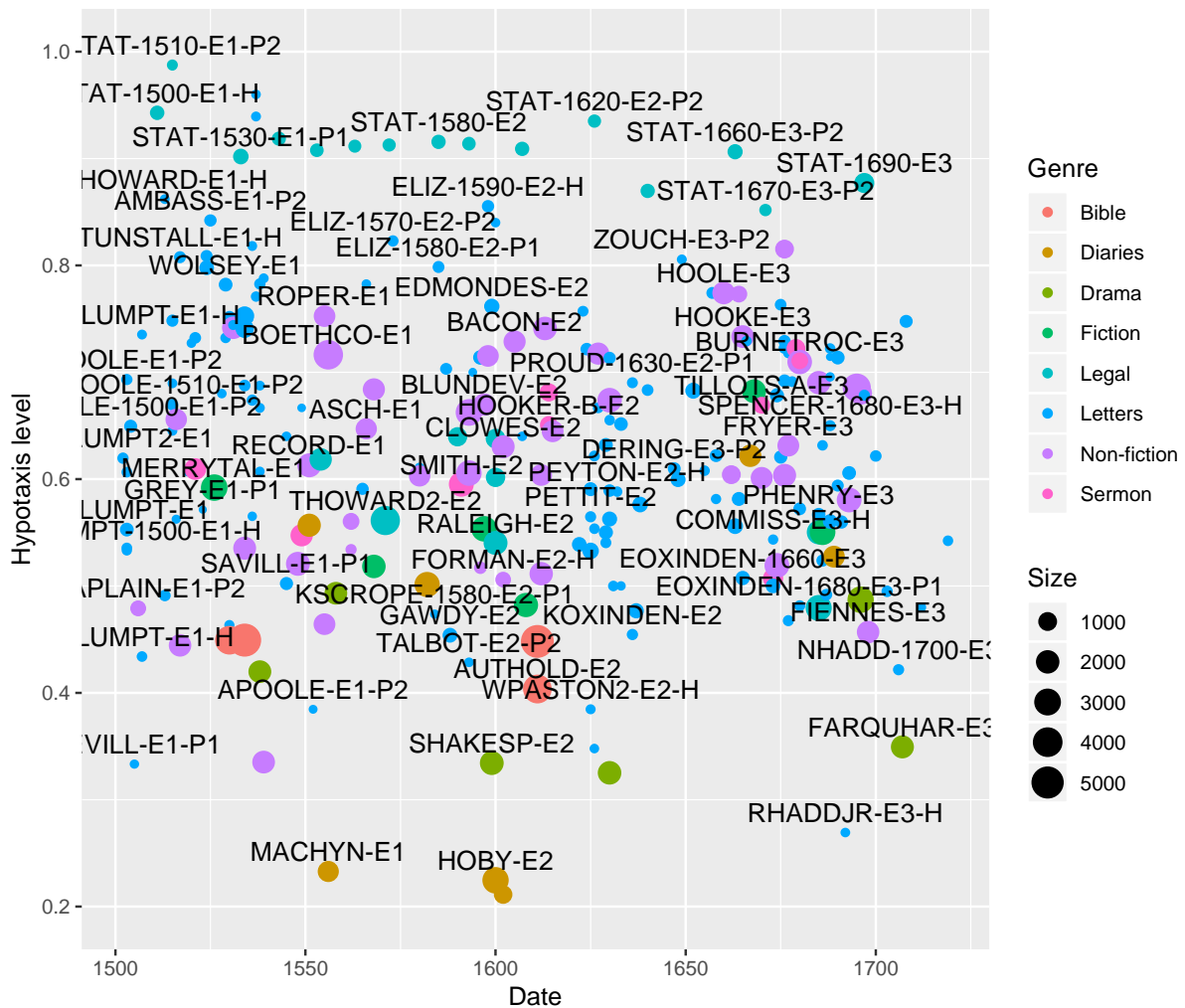


Figure 3. Hypotaxis levels in Early Modern English

Once more, it is hard to identify a diachronic development, but here, for the first time, clear genre distinctions can be observed. The most paratactic texts are diaries by Simon Forman (forman-diary-e2), Margaret Hoby (hoby-e2), and Henry Machyn (machyn-e1), and diary texts in general exhibit below-average levels of hypotaxis. The same is true, unsurprisingly, of bible translations such as the 1611 Authorized Version (authold-e2, authnew-e2). At the other end of the scale, we have texts with a hypotaxis level of 85% or more. Almost all of these are legal texts, specifically statutes, and it is clear that this genre has stylistic norms that involve a distinct preference for hypotaxis. The most hypotactic text of the period—in fact, of any period—is an Acte of Apparell from the 1510s, an extract of which is given in (6).

(6) Forasmuche as the great and costly arraye and apparell used within this Realme cont=arie to good Statut~ thereof made hath ben the occasion of great impov~ysshyng of div~se of the King~ Subgiett~ and p~voked of theym to robbe and to do extorcion and other unlauffall ded~ to mayntayn therby their costely arraye; In eschewyng wherof be it ordeyned by the auctoritie of this p~sent p~liament that ...

And that ...

And that ...

And that ...

And that ...

Each of the provisions of the statute is introduced in its own *that*-clause; hence, virtually the whole text consists of a list of *that*-clauses.¹⁰

Finally, hypotaxis levels for the Late Modern English period are given in Figure 4.

¹⁰ It could be questioned whether texts like these are hypotactic in any real sense. *And that* in this genre may function as a quasi-adverbial, or even as a coordinating conjunction, in which case we would be dealing here with “fake hypotaxis”. I will not pursue this suggestion further at this point, however.

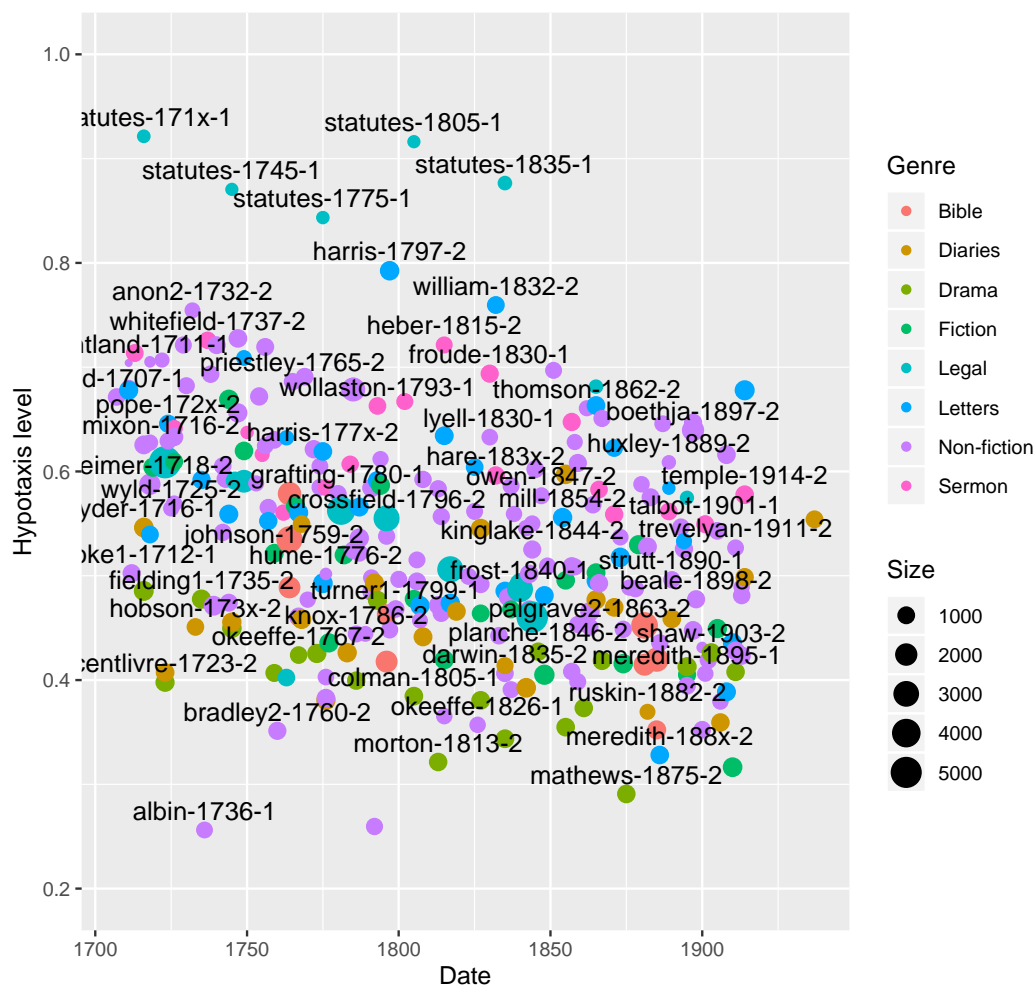


Figure 4. Hypotaxis levels in Late Modern English

Again, we see that statutes are exceptionally hypotactic, at least up to the first half of the nineteenth century. Perhaps surprisingly, the lowest hypotaxis level is found in two scientific texts: Eleazar Albin’s *Natural History of Spiders* (1736) and Robert Robertson’s *Observations on Fevers and Other Diseases* (1792). Drama texts, which are well represented in this period, such as Morton’s (1813) *Education* and Mathews’s (1875) *My Awful Dad* (both comedies), also exhibit relatively little hypotaxis.

In Figure 5, results from all four corpora are combined, providing a picture of the overall development of hypotaxis levels from the earliest English prose texts up to the early twentieth century.

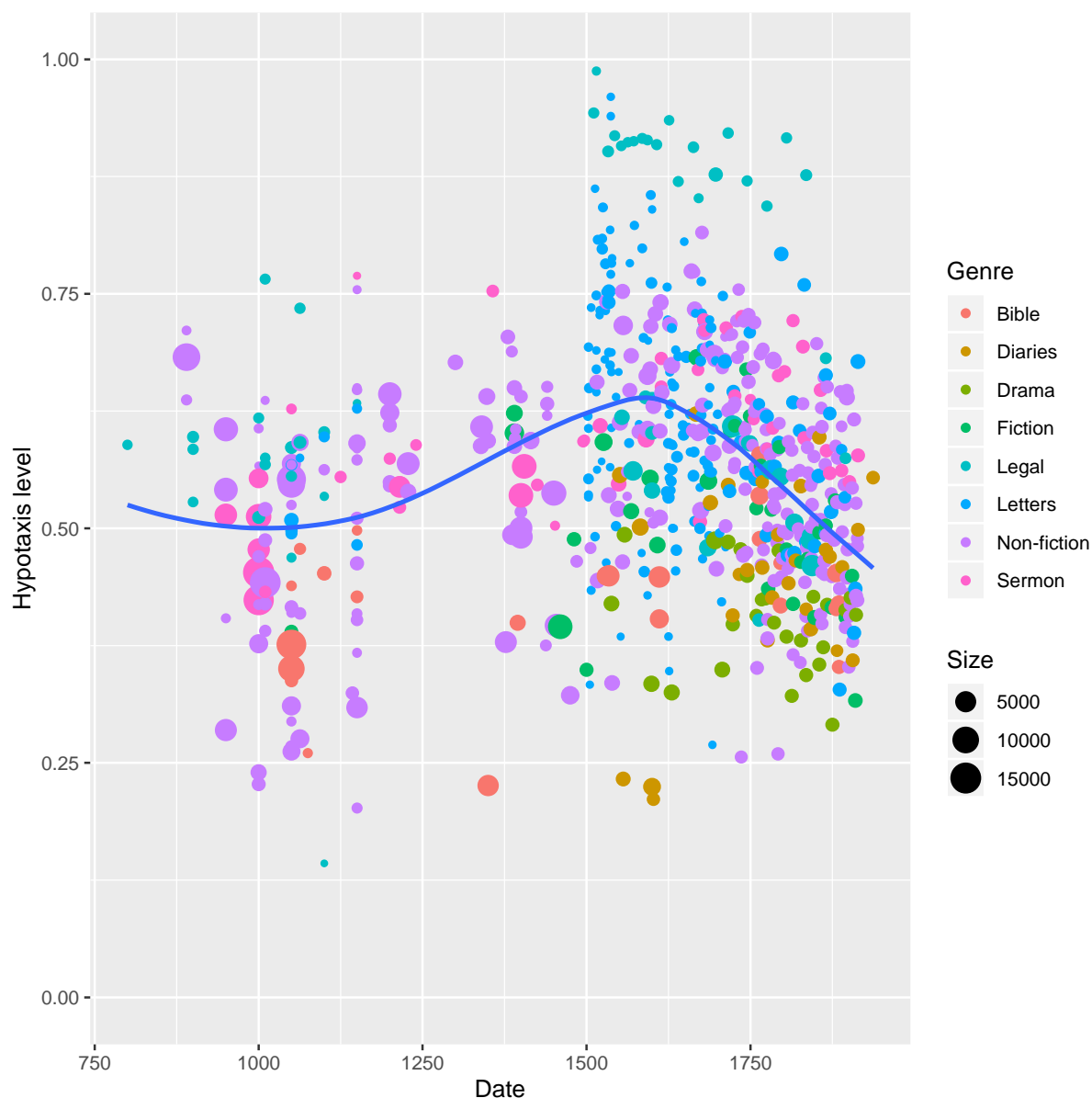


Figure 5. Hypotaxis levels across the history of English

A glance at Figure 5 immediately makes it clear that Dąbrowska’s (2015) claim does not hold for the history of English. This graph includes a blue line which represents a smoothed conditional mean.¹¹ This mean has no theoretical significance, but allows us to more easily see

¹¹ Plotted using `geom_smooth` in `ggplot2` (Wickham 2016). For a dataset of this size, the smoothing function is LOESS (locally estimated scatterplot smoothing) local polynomial regression. The mean is of course susceptible to the effects of outliers, but experiments with a smoothed conditional median rather than mean yield a curve with approximately the same shape; see the supplementary materials at <https://doi.org/10.5281/zenodo.7477013> for details.

the direction of any trends in the data. There is an upward trend, but only for a limited period, roughly between 1250 and 1550. The most dramatic trend is actually downwards, from 1600 onwards. Moreover, the between-text variation in the dataset is huge. All periods have texts with a relatively low hypotaxis level (circa 25%) and texts with a relatively high hypotaxis level (circa 75%). Between 1500 and 1850 we also see “superhypotactic” texts with a hypotaxis level of 85% or more, but only in the genres of legal texts (specifically statutes) and some letters.

This genre effect brings us to another important point. Legal texts and letters are not well represented in the pre-1500 corpora. In general, for these corpora, texts are fewer, sample sizes larger, and genre diversity lower. Also, although Old English law codes and Early Modern statutes are both coded as legal texts, it is questionable whether they really represent the same kind of language (especially since Middle English legal texts are entirely absent).

In order to evaluate the effects of time and genre statistically, I fitted a mixed-effects linear regression using R and the packages `lme4` (Bates et al. 2015) and `lmerTest` (Kuznetsova et al. 2017), with hypotaxis level as the dependent variable. Date was included as a continuous fixed effect, and genre as a random intercept.¹² Although there is no a priori reason to expect the diachrony of hypotaxis to behave in a linear way (and eyeballing Figure 5 suggests that it doesn't), a positive linear effect of time should at least be detectable if Dąbrowska's (2015) hypothesis is correct for English. Overall, however, a tiny negative effect is found ($t=-0.00006$; $p=0.0003$).

It is also possible to calculate Nagelkerke's R^2 , a measure of goodness of fit, for this model using the method of Nakagawa et al. (2017) as implemented in the package `MuMIn` (Bartoń 2009–). Broadly speaking, this figure tells us how much of the variance in the dataset is explained by the predictors we've included. The marginal R^2 for our model—which considers

¹² The rationale for treating genre as a random intercept rather than a categorical fixed effect is that the set of genre categories used in the study does not exhaust the possible genres that one could investigate; that is, not all conceivable texts in the population could in principle be assigned to one of these genres.

only the fixed effect of time—is 1.2%. The conditional R^2 , on the other hand—which also considers genre—is much higher, at 43.2%.¹³ Thus, we can conclude that genre is a much better predictor of variation in hypotaxis levels than time is, at least as regards this simple linear model.

Karlsson's (2009) suggestion that English is most hypotactic in the seventeenth century is closer to the results presented in this section, though the peak in hypotaxis in Figure 5 occurs in the second half of the sixteenth century rather than in the seventeenth. Again, though, it must be emphasized that the imbalance in genre in the corpora means that any such statement must be hedged substantially, at least if we are trying to draw conclusions about the diachrony of the language as a whole. In view of the genre facts discussed above, it could be questioned whether we are really dealing with a change in the grammar of English¹⁴ (or even in usage preferences) rather than localized stylistic shifts which affect writing for specific purposes at specific points in the language's history.

Can we generalize further than just “each genre has its own history”? One plausible direction to investigate is the dimension of orality and literacy, and register. Chafe (1982: 44) presents data showing that (finite and non-finite) complement clauses and relative clauses in English are about twice as common in formal written production than in informal spoken production; he argues that this is because speaking is faster than writing. If embedding incurs some kind of processing cost, which can be mitigated given time, then the greater rarity of these structures in speech is not surprising. Of course, the historical corpora only include written texts; however, among the genres included in this study, drama, diaries and sermons could be considered closer to speech in an intuitive sense, while letters and legal texts (especially statutes) are more prototypically written.

¹³ Though, even with the inclusion of genre as a predictor, less than half of the variance in the dataset is explained, so the explanatory success of this model should not be overstated.

¹⁴ To the extent that talking about “change in the grammar of English” is meaningful at all, given that English, like other languages, cannot really be said to be an object which changes over time. See Walkden (2021: 8–12) for discussion.

This perspective could be useful to explore further, though it also has its limitations. Biber (1995: 261–264) casts doubt on the idea that clausal embedding is more associated with written registers than oral registers across the board. In his findings, functions of different types of clausal embedding are found across dimensions of variation: while relative clauses are characteristic of written and informational registers, adverbial subordination is used more in oral registers, and infinitives and non-finite complement clauses are found frequently in both. Similarly, Biber & Gray (2016) show that—contrary to common preconceptions—present-day English academic writing, a prototypically written variety, makes relatively little use of embedded clauses, instead preferring nominal modification to convey the same information. A systematic study of the relation between genre, register and hypotaxis across the history of English, and the extent to which changes in this relation involve shifts in conventions of (narrative) style as opposed to developments which are more straightforwardly ‘functional’, would certainly be useful in future.

3.3 *Frequency of clause types: More fine-grained distinctions*

The annotation of the YCOE and Penn Parsed Historical Corpora allows us to make further distinctions between clause types. In Figures 1–5, finite embedded clauses and non-finite clauses were conflated, but these can be teased apart. Furthermore, among unembedded clauses (IP-MAT), we can distinguish between independent main clauses and conjoined clauses. Among embedded finite clauses (IP-SUB), we can distinguish between adverbial clauses, clefts, comparative clauses, degree clauses, questions (direct and indirect), exclamatives, relatives, free relatives, and complement clauses (*that*-clauses). The distribution of all these clause types across time is visualized in Figure 6.

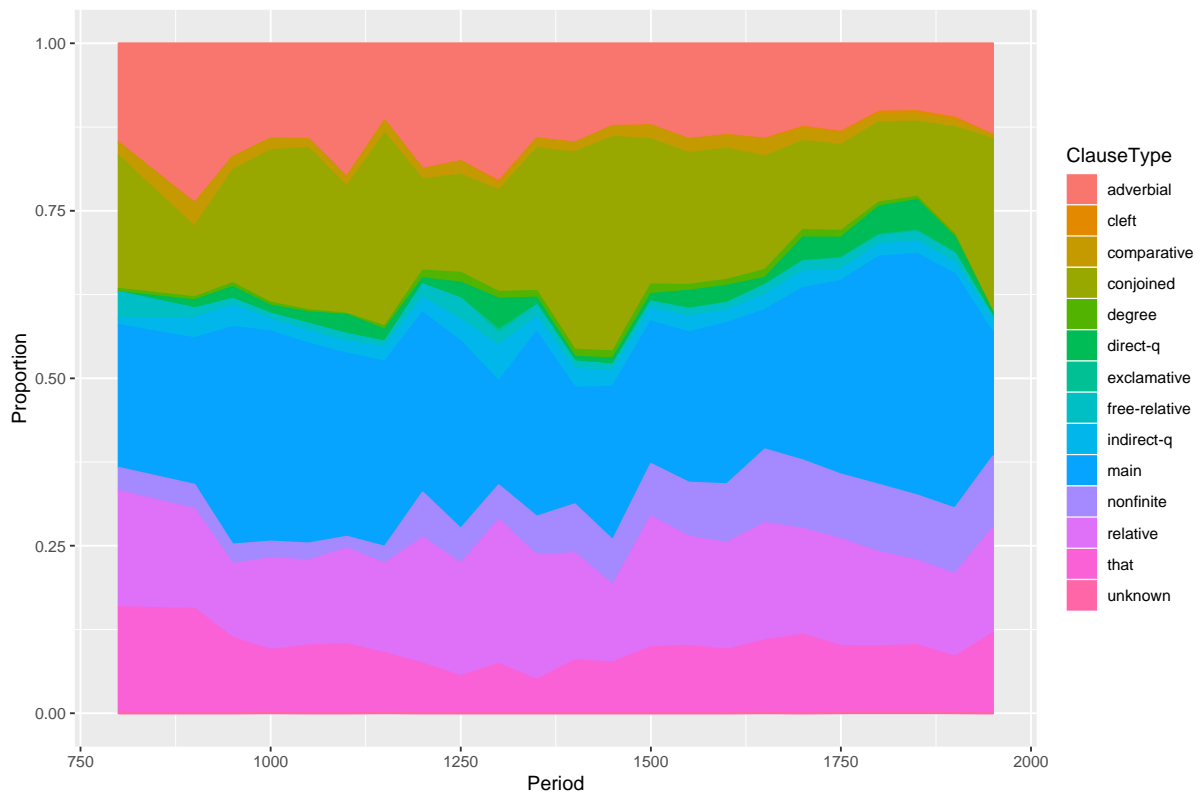


Figure 6. Different clause types across the history of English

Figure 6 collapses texts into fifty-year intervals and shows what proportion of all clauses is constituted by each type of clause. As with Figure 5, we can immediately see here that there is no global trend across the history of the English language. Overall, the proportions of various clause types in the ninth century are not all that different from the proportions in the nineteenth.¹⁵ That said, certain shifts can be observed. First of these is an increase in the proportion of non-finite clauses. Throughout Old English these are quite rare, but gradually become more common during the Middle English period, stabilizing after 1500 at a higher relative frequency. These gains seem to occur at the expense of *that*-clauses and finite adverbial clauses. This is consistent with Los's (2005) proposal that the *to*-infinitive competed with, and gained ground against, finite embedded clauses during Old and Middle English.

¹⁵ The final time period in Figure 6, representing the middle of the twentieth century, is based on a single text which is a deliberately archaizing forgery (knyveton-1752-actually-gray-1937-2), and should probably be ignored.

The second shift that is visible is the increasing use of independent (main) clauses across the modern period, between 1500–1600 and 1900. During this period, conjoined clauses and (to a lesser extent) finite relative and adverbial clauses seem to become correspondingly rarer. This second shift does not correspond to any trajectory previously proposed in the literature, as far as I am aware. It is possible that it may relate to what Rohdenburg (2006) and subsequent literature call the “Great Complement Shift”, but that does not obviously explain any competition between conjoined and non-conjoined unembedded clauses that may be occurring during the modern period. I leave this issue for future research.

4. Summary and conclusion

In this chapter, I’ve discussed two stories that, while different in their details, share the leitmotif that parataxis precedes hypotaxis in the history of English. The first, examined in §2, is the idea that complement clauses develop via reanalysis of two juxtaposed independent clauses, and that the complementizer *that* itself originates as a reanalysed cataphoric demonstrative pronoun. Following Axel-Tober (2009, 2012, 2017), I’ve argued that this is unlikely to have been the case. Rather, *that*-complement clauses arose as a result of reanalysis of relative clauses introduced by relativizer *that* (< **pat*) post-Proto-Germanic and no later than Proto-West Germanic, and the complementizer *that* originates via grammaticalization from what was originally a relative pronoun. This scenario requires no special pleading as regards mechanisms, constituent order, or source constructions, and is compatible with a pathway of grammaticalization that is widely attested cross-linguistically. Since relative clauses, like complement clauses, are embedded clauses, there is no development from parataxis to hypotaxis under this scenario.

In §3 of this chapter, I addressed the idea that a change from parataxis to hypotaxis takes place in the history of English that involves a gradual shift in frequency from the former to the latter, with more use of embedded clauses as time goes on. Using the YCOE and the Penn Parsed Corpora of Historical English, I showed that this idea was unsupported: at all times in the attested history of English there has been substantial inter-text variation as to the proportion of embedded clauses used (hypotaxis level), and there is no global trend over time towards more hypotaxis. To a substantial extent, the variation that we find appears to be predicted by genre, and more work in this direction would be desirable, especially for the post-1500 period, for which we have English texts belonging to a wide variety of genres. Work in this vein may shed light on the question of why there is a gentle but clearly perceptible decline in hypotaxis level in the corpora during this period.

Taken together, these two case studies should hopefully encourage the reader to reflect on the origins and foundations of the idea that parataxis precedes hypotaxis in language history. I am not the first sceptical voice on this topic: Harris & Campbell (1995: Chapter 10) subject what they term the Parataxis Hypothesis to vigorous critical discussion, and Weiß (2020) also discusses and rejects a paratactic origin for complementizers. I also can't pretend to have disproven the idea that parataxis precedes hypotaxis outright: depending on what one understands by "parataxis", "precedes" and "hypotaxis", a variety of claims and facts could be made consistent with that idea.

One such is the claim that relative clauses embedded within the nominal they modify originate as adjoined relative clauses, outside the nominal but within the higher clause. This idea is applied to Old English by O'Neil (1977) and Kiparsky (1995), both of whom are inspired by Hale's (1976) work on Warlpiri.¹⁶ More recently, Wallenberg (2016) has presented

¹⁶ The two authors differ on the timing: for O'Neil, the adjunction analysis is the norm in Old English and gives way to embedding only during the transition to Middle English, whereas for Kiparsky the change to an embedding structure has already taken place by the start of this period, with only traces of the adjunction structure remaining. On the context of Hale's 1976 paper and its influence on his MIT colleague O'Neil and others, see Mackie (2008, 2012).

intriguing quantitative evidence for the adjunction analysis in historically-attested Indo-European languages, including historical English. None of these authors uses the terms hypotaxis and parataxis, nor is it obvious that the terms make sense in this context: both adjoined and “embedded” relative clauses are clearly embedded within a higher clause rather than syntactically independent, hence hypotactic rather than paratactic (cf. Harris & Campbell 1995: 428, note 30). In my view, therefore, it is better to consider this line of inquiry to be separate from the traditional parataxis-to-hypotaxis narrative. The same is true for the literature on “levels of integration” of formally embedded clauses: it is clear that embedded clauses may integrate into independent clauses in various structural configurations (see, e.g., Haegeman & Greco 2018 on West Flemish), and that this may change over time (see, e.g., Speyer 2011 on German), but there is no rationale for muddying the waters by using the terms parataxis and hypotaxis for this.

In sum, neither of the case studies I have presented provide evidence for parataxis preceding hypotaxis in the history of English. Perhaps parataxis precedes hypotaxis in a different way I haven’t considered here—but I would contend that the burden of proof lies with those who wish to make such a claim.

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