

THE INFLUENCE OF LATIN ON OLD ENGLISH ADJECTIVAL POSTPOSITION

MACIEJ GRABSKI

University of Lodz, Poland
maciej.grabski@uni.lodz.pl

Abstract

The article is a systematic, corpus-based account of Latin's influence on the position of Old English (OE) adnominal adjectives. While multiple studies on phrase-level syntax suggest that source-text interference may have been partly responsible for placing the adjective after the head noun, this observation has so far received little quantitative underpinning. The present article offers a detailed comparison of OE target noun phrases containing postnominal adjectives with their Latin counterparts to determine the exact extent to which this arrangement may have been a syntactic calque from a foreign language. The study has found that while a fair number of OE postposed adjectives did copy their Latin originals, their placement could be accounted for through reference to tendencies characteristic of OE (i.e. the adjective displays different degrees of "verbalness" or is part of a heavy phrase). Therefore, it appears that translated texts do not have to be excluded or treated with particular suspicion in studies concerned with the position of adnominal adjectives.

Keywords: Old English, syntax, corpus linguistics, Latin

1. Introduction

Studies in Old English (OE) word order, in an attempt to at least partly account for syntactic patterns deviating from what is considered the norm, have probably invoked the influence of Latin less regularly than could be expected, given the extent to which the early Anglo-Saxon literary endeavors – at least in prose – are indebted to Latin. A sizeable portion of the surviving OE material is translations but even more or less autonomous texts were probably never entirely free from Latin influence. This dependence is discussed e.g. in Timofeeva (2010), who divides her study corpus into the two sub-corpora of glosses and translations on the one hand, and Latin-independent texts on the other, but still reports that “[m]ost of the APCs [absolute participle constructions] in the independent texts turn out to be either direct translations from Latin ... or set phrases going back to similar Latin expressions” (2). The complexity of the issue of OE-Latin relations is well summarized in Irvine (2012: 59), who, commenting on the vernacular used in translations of king Alfred's era, concludes that it “had a lasting impact on the

use and development of the language: its association ... with intellectual endeavour ... enabled its acceptance as a literary language in its own right.” Thus, it can be ventured that Latin permeated written OE on multiple levels, even beyond translated texts.

Yet, there are studies which not only appear to be insensitive to similar subtleties but also choose not to make “any reference to the source texts, and ... do not provide the equivalent Latin clause in examples used for analysis” while dealing with translated material with a clearly traceable source (Cichosz et al. 2016: 32). This is true e.g. for Fischer et al. (2000) in clause-level syntax, or Haumann (2010) and Fischer (2012) in noun phrase-level syntax. Meanwhile, Cichosz et al. (2016) provide compelling, corpus-supported evidence that some OE translations from Latin “demonstrate many features which are, or may be, the result of source text influence” (364).

These findings suggest that it would be advisable to consider potential source text influence at least in cases where OE word order is out of keeping with dominant patterns. On the phrase-level, the position of the adnominal adjective with respect to the head noun shows enough variability to be studied in that context. While Mitchel (1985: 75) remarks that “the order adjective + noun is the norm” (in line with the general tendency of all the noun’s qualifying elements to precede it, reported e.g. in Fischer et al. 2000, Fischer & van der Wurff 2006, Trips 2015), postnominal adjectives, exemplified in (1), are rather well-attested:

- (1) *he eow betæcð mycele healle gedæfte*
 he you shows large room ready
 ‘he will show you a large room which has been prepared’
 (cowsgosp,Lk_[WSCp]:22.12.5426)

Mitchel (1985: 78) lists Latin as one possible factor causing adjectival postposition, but no in-depth analysis follows; Pysz (2009) excludes translations from her study “to eliminate any material which would be under direct influence of Latin”; Fischer (2001) does not include Bede’s *Historia Ecclesiastica* and Pastoral Care in her analysis on grounds that these texts are said to “simply follow the Latin word order very strictly” whenever adjectival postposition is the case; Sampson (2010) also accepts that the Latin factor can have impact on the ordering within OE Noun Phrase, “as many OE texts are translations from Latin or were inspired by Latin originals” (31). On the other hand, Haumann (2010), discussing adjectival postposition in the generative grammar framework, makes no mention whatsoever of Latin source texts, giving examples indiscriminately, from all types of prose texts (e.g. from Bede).

Regardless of their stance on the potential Latin source text influence on OE adjectival postposition, major studies on the subject suggest that some other factors may be at play when it comes to placing adjectives to the right of the noun. Spamer (1979) argues that postposition of adjectives in OE generally resulted from the simple fact that the language disfavored adjective stacking, so whenever two adjectives were needed, they typically ensconced themselves on the opposite

sides of the noun, resulting in the postposition of one of them. Ringe and Taylor (2014: 451) are critical of Spamer (1979) and call his treatment of data “partial”, but, in a somewhat similar vein to Spamer, Sampson (2010: 101-2), in a corpus-based study, suggested that additional premodification of the head noun (by an adjective or some other modifier) might have been a factor in postposing a second adjective. The study further argues that the postposition of the adjective against the head noun was most likely to occur when both the adjective and the noun were additionally pre-modified (ibid.: 101-2). In sum, Spamer’s (1979) and Sampson’s (2010) accounts attempt to approach the issue of adjectival modification through reference to purely syntactic concepts of stacking (or lack thereof) and phrase weight, respectively.

On the other hand, Fischer (2000, 2001) rejects weight and lack of stacking potential as factors in postposition. Instead, the author maintains that OE adnominal adjectives abided by the principle of iconicity, meaning that elements less tightly connected to the noun will follow, rather than precede it. Consequently, adjectives displaying more ‘verbal’ characteristics – e.g. referring to temporary states rather than enduring properties or allowing complementation by Prepositional Phrases (PP) or Noun Phrases (NP) in dative – will be postposed, being “rhematic with respect to the noun they modify” (Fischer 2001: 271). Haumann (2010) is generally in agreement, also claiming that OE postnominal adjectives are predicative, rhematic, and denote incidental rather than inherent properties.¹

In sum, major studies on the position of OE adnominal adjectives suggest that various syntactic and semantic factors may be reliable predictors of postposition, while some authors make an additional caveat concerning a potential Latin source influence, although others make no mention of a possible translation effect. But in either case, the treatment of source text interference is rather impressionistic, in that the target structures are never systematically compared with their original counterparts to convincingly prove or disprove that Latin may have played a part in informing the postnominal placement of the adjective. Lack of quantitative accounts concerning this issue is likely due to the absence of parallel corpora of Latin and Old English which would align translations with their sources (with the exception of ENHIGLA, by Cichosz et al. 2014, a parallel syntactically annotated corpus of Old English, Old High German, and Latin; its OE-Latin part consists of a sample of 12,000 clauses from the Book of Genesis, Bede’s *Ecclesiastical History*, and West-Saxon Gospels). Consequently, it is not clear if the structure of OE Noun Phrase can be reliably hypothesized about on the basis of texts which are either direct translations from Latin or were otherwise composed under an indirect influence of Latin literary tradition

¹ Fischer’s (2001) and Haumann’s (2010) respective accounts differ in that the former also extends the aforementioned properties to prenominal adjectives, as long as they inflect strong, thus giving primacy to inflection rather than position; Haumann (2010), on the other hand, believes that the characteristics listed hold for postnominal adjectives only.

2. Study design

Given the lack of a systemic analysis of a potential Latin influence on the Old English Noun Phrase and different decisions made by the relevant studies with respect to including translated texts, the aim of this study is to establish if the postposition of OE adnominal adjectives may have been a translation effect. To that end, the following study questions have been formulated:

a) How regularly do postposed adjectives in OE translations copy the Latin source?

b) Is it possible to account for adjectival postposition in OE translations through other factors listed in the relevant studies as potential triggers of postposition?

c) Is the frequency of adjectival postposition in translations different than in non-translations?

The OE data were obtained from the York-Toronto-Helsinki Parsed Corpus of Old English Prose (YCOE, Taylor et al. 2003), a 1.5-million-word syntactically annotated database. In order to extract the necessary strings, the relevant queries were fed to CorpusSearch2 (Randall et al. 2005-13).

To address the first question, OE noun phrases in translated texts had to be compared with their Latin counterparts manually. Due to a rather painstaking nature of this procedure, only those translations which were more or less faithful efforts easily traceable to their sources were selected. Texts such as e.g. *The Old English History of the World*, the OE rendition of Orosius's *Seven Books of History against the Pagans*, were excluded from the analysis, given a high degree of creative freedom enjoyed by the anonymous translator, who "actively transformed Orosius's narrative: cutting extraneous detail, adding explanations and dramatic speeches, and supplying a long section on the geography of the Germanic world" (The Old English History, n.d.). Matching the English passages to their originals could be hardly accurate because of such obfuscation. Texts such as e.g. *Bald's Leechbook* were also omitted due to the multiplicity of sources serving as the basis for the OE text; Cameron (1983: 153) notices that the meaning of the Latin *conscribere* (a verb used in the *Leechbook* with reference to the process of its commissioning) may be twofold, and consequently, it is "difficult to determine whether Bald ordered Cild to compile the book or simply to transcribe it." The translations selected for the following study are Bede's *Ecclesiastical History of English People*, *Gregory's Dialogs*, the *Pastoral Care* (all probably Alfredian texts), the *Benedictine Rule*, *Ælfric's Heptateuch* (the first seven books of the Old Testament, i.e. Genesis, Exodus, Leviticus, Numbers, Deuteronomy, Joshua, and Judges), and the *West-Saxon Gospels*.

Table 1: Texts translated from Latin selected for the study

text	word count
Bede's Ecclesiastical History of English People	80,767
Pastoral Care (Cura Pastoralis)	68,556
Gregory's Dialogs (C)	91,553
The West-Saxon Gospels	71,104
The Heptateuch	59,524
Benedictine Rule	20,104
Total	391,608

Table 2: Non-translated texts selected for the study

text	word count
Ælfric's Catholic Homilies 1&2	204,756
Ælfric's Homilies	62,669
Ælfric's Lives of Saints	100,193
Alfred's Introduction to Laws	1,966
Anglo-Saxon Chronicle A	14,583
Anglo-Saxon Chronicle C	22,463
Anglo-Saxon Chronicle D	26,691
Anglo-Saxon Chronicle E	40,641
Blickling Homilies	42,506
Charters and wills 1	1,753
Charters and wills 2	253
Charters and wills 3	679
Charters and wills 3	7,171
Charters and wills 4	193
Laws of Æthelred V	1,228
Laws of Æthelred VI	2,096
Laws of Alfred	3,314
Laws of Cnut	7,147
Laws of Gerefa	751
Laws of Ine	2,755
Laws of William	220
Martyrology	31,472
Northumbra Preosta Lagu	1,330
Vercelli Homilies	45,674
Wulfstan's Homilies	28,768
Total	651,272

The frequency of postnominal adjectives (and the contexts in which they occur, which are explained below) in translated texts is then compared with non-translations. The texts classified as such are dominated by the output of Ælfric,

whose *Homilies*, *Lives of Saints*, and two series of *Catholic Homilies* amount to approximately 350,000 words. To balance out this tilt, this part of the study corpus also includes some of the most prominent and longest non-translations, such as *Blickling*, *Vercelli*, and *Wulfstan's Homilies*, as well as *Martyrology*. These texts were complemented by the *Anglo-Saxon Chronicle* as well as by laws and documents; the YCOE compilers have classified this group as texts of uncertain provenance in terms of the composition's originality, but they are included for the sake of generic diversity, the other texts being mostly religious prose (often designed for oral delivery). The full list of non-translations selected for the study is shown in Table 2.

Addressing the first study question, i.e. how often translated texts follow the originals, has obvious implications for determining how often translations modify the source. It needs to be noticed that the mere fact that a given syntactic structure copies the original does not mean that it would not have occurred independently. This is one of the central assumptions in Cichosz et al. (2016), where the authors look exclusively at texts translated from Latin (into OE and Old High German), noticing that translations “may be a second choice for a syntactic study, but they are not necessarily a bad choice” if the methodology is sound (ibid.: 31). By checking which “following Latin” patterns occur in similar contexts in the “modifying Latin” groups, the authors broaden the sample of clauses which lend themselves to the analysis of native Germanic patterns (other studies usually reject clauses replicating the source syntax). Likewise, the present study will not only look at how many instances of adjectival postmodification replicate the original arrangement and content itself with concluding that source text interference must have taken place, but – as specified in the second study question – it will additionally check if these instances of postposition occur in similar contexts as do those where the original syntax is modified. To that end, attention will be given to a number of factors which the relevant literature lists as playing a part in adjectival postmodification. Consequently, following Fischer (2000, 2001), Haumann (2010), Spamer (1979) and Sampson (2010), postposed modifiers were divided into the following categories: stage-level adjectives and participles, adverb-like adjectives, adjectives governing complements, and individual-level adjectives. These categories are briefly characterized below.

Adjectives referring to temporary states that nouns experience rather than to their inherent characteristics are labeled ‘stage-level’ in Haumann (2010). Fischer (2001) simply writes about adjectives describing incidental properties, i.e. such modifiers that denote “action[s] involving the thing” rather than enduring properties of things (Fischer 2001, 273, fn. 3, after Vendler 1967: 175), but both authors mean cases such as (2):

- (2) *se cyng seoc*
 the king sick
 (cochronC,ChronC_[Rositzke]:1015.14.1624)

To further her point that postposition favors such ‘verbal’ adjectives, Fischer (2000, 2001) points to a high incidence of postposed participles, which, being deverbal elements, clearly refer to incidental rather than inherent properties of the nouns they modify. Actually, Fischer’s (2012) article entitled “The status of the postposed ‘*and*-adjective’ construction in Old English: attributive or predicative?” concerns both parts of speech, with examples of adjectives and participles used interchangeably. Also, the annotators of the York-Toronto-Helsinki Parsed Corpus of Old English prose seem to have used the ‘adjective’ label for some elements whose morphology would suggest that they are participles: e.g. *unlacnode*, ‘uncleaned,’ features a characteristic participial suffix *-od-*, but the word is classified simply as an adjective. Therefore, prototypical stage-level adjectives will be considered together with present and past participles, shown in (3) and (4) respectively:

(3) *þone cyning liggende*
 the king lying
 (cobede, Bede_3:16.228.18.2345)

(4) *ða scylde unwitnode*
 that guilt unpunished
 (cocura, CP:17.123.3.827)

Another ‘verbal’ group mentioned by Fischer (2001) in the context of postposition is adjectives which can be interpreted adverbially, in that they refer to time, direction, or degree. Fischer (2001) specifically mentions adjectives ending in *-weard*, ‘-ward,’ such as (5), where the adjective clearly points to a specific location rather than conveying any particular quality, but in the following sections, other ‘adverb-like’ adjectives will be considered, as they vary from text to text.

(5) *ðam walle ufonweardum*
 the wall top-of
 (cobede, Bede_5:13.428.32.4322)

Additionally, Fischer (2001, 2012) claims that postposition is linked with a further complementation of an adjective, which can govern a prepositional phrase, a dative NP, or an NP in genitive, as illustrated by (6), (7), and (8) respectively.

(6) *witega mihtig on spæce & on weorce*
 prophet mighty in words and in deeds
 (cowsgosp, Lk_[WSCp]:24.19.5674)

(7) *cyrcean wurðlice þam halgan*
 church worthy that saint [DAT]
 (coelive, ÆLS_[Edmund]:168.7063)

- (8) *buc ful wæteres*
 bottle full of-water
 (cocathom2, ÆCHom_II, 31-32:247.171.5489)

In Fischer (2004: 21), the author specifically rejects the weight parameter as influencing the postposition of such adjectives and instead argues that the ability of the adjective to govern elements such as prepositional phrases is indicative of its “verb-like behavior” and as such provides sufficient explanation for the postnominal position of the adjective.

Adjectives describing endurable properties are termed ‘individual-level’ by Haumann (2010), and while Fischer (2000, 2001) does not use a similar label, she too writes about non-verbal adjectives, which are decidedly closer to the nominal cline, since they describe inherent qualities rather than actions at a given point in time. According to both authors, such modifiers will be disfavored by the postnominal position. In line with the above definition, adjectives such as (9) were classified as individual-level:

- (9) *þæt wif gewittig*
 that woman wise
 (cocathom2, ÆCHom_II, 10:85.153.1718)

Additionally, stage-level adjectives, participles, and individual-level adjectives were further divided into subcategories, depending on whether the head noun was additionally modified by an element in preposition – this is demonstrated in (10) and (11):

- (10) *getreowne þegn unsynnigne*
 honest thane guiltless
 (cocura, CP:3.37.7.186)
- (11) *monig þing gemyndewyrþe*
 many things worthy-of-remembering
 (cobede, Bede_5:13.422.19.4244)

The category of ‘another element preceding noun’ was distinguished on the basis of Spamer (1979), who suggests that the head noun’s additional premodification might have played a role in adjectival postposition (so as to avoid stacking). Elements counted as additional premodification were adjectives, numerals, quantifiers, and NPs in genitive; demonstrative pronouns were not counted, so cases as (9) were classified as simple postposition without additional premodification of the head noun. Also, in line with Sampson (2010), who claims that the additional modification of the head noun and the second adjective is the scenario most conducive to postposition, cases such as (12) are counted and included in the ‘another element preceding noun’ category.

- (12) *side beardas. hwon harwenge*
 ample beard somewhat hoary
 (cocathom1, ÆCHom_I, 31:440.33.6097)

The subdivision according to Spamer (1979) and Sampson (2010) was not applied to adverb-like adjectives and adjectives governing further complements. With regard to the former, they sometimes cannot but be accompanied by an additional modifying element – a variable that will be considered as a potential factor in causing postposition. Witness (18):

- (13) *syx ger ful*
 six years full
 (cobede, Bede_2:11.138.28.1342)

The adjective ‘full’ requires that the head noun be premodified by a numeral – otherwise, the degree of fullness, conveyed by this adjective, would be unclear. As regards adjectives governing further complements, they will be considered separately on syntactic grounds, as a category defined by a further modification of a postnominal modifier – a variable also considered in terms of its contribution to postnominal placement.

Additionally, among the individual-level adjectives, the adjective *ælmihhtig*, ‘almighty,’ merits special attention; this adjective typically modifies the noun ‘God’ (or some other denomination of ‘God’) and probably occupies the marked position for stylistic reasons (Mitchell 1985: 78). Other studies also emphasize a special status of this adjective: e.g. Crisma (1999: 109) writes that ‘God almighty’ is the “single lexical choice” which demonstrates the so-called N-to-D (Noun to Determiner) movement in OE. Consequently, this particular noun-adjective combination is excluded from scrutiny.

3. Results

In the texts selected for this study, 127 postnominal adjectival modifiers were analyzed. In 54 cases, the corresponding passages in the Latin originals also featured postposition, which means that the translations followed the source syntax 42% of the time. On the level of individual texts, the Latin word order is copied with a more or less similar relative frequency, with the exception of Pastoral Care, where only 2 out of 15 postposed adjectives follow Latin, and Benedictine Rule, where only two examples of postnominal adjectives were found and neither of them corresponded to a similarly arranged NP in the original. The detailed numbers are given in Table 3 below.

Table 3: Postnominal adjectives in translations

Text	all postposed adjectives	postposed in Latin
Bede	48	20 (40%)
Cura	15	2 (13%)
Gregory	22	10 (45%)
WS Gospels	23	13 (57%)
Heptateuch	17	9 (53%)
Rule	2	0 (0%)
Total	127	54 (42%)

The raw numbers might suggest that Latin was indeed a noteworthy factor influencing the OE adjectival postposition. However, a closer qualitative analysis reveals that in the overwhelming majority of cases where Old English copies Latin, at least one more trigger of postposition mentioned in the relevant literature is potentially active. Moreover, these triggers also appear to be operating where the translated texts employ adjectival postposition independently of the originals, this pattern holding in equal measure for all the translations considered in this study. The detailed behavior of individual texts is discussed below.

Bede's Ecclesiastical History and the Pastoral Care are analyzed first, being the two texts Fischer (2001: 273, footnote 2) excludes from her study on grounds that the respective translators "simply follow the Latin word order very strictly". As evidenced by Table 3, such close correspondence is at least disputable in the case of Bede and barely displayed by the Pastoral Care. Table 4 gives the full semantic and syntactic context of adjectival postposition in Bede, also taking into account the word order of the Latin original.

Table 4: Contexts for adjectival postmodification in Bede

	independent of Latin	following Latin
adverb-like adjectives	15	3
adjectives governing complements	4	1
stage-level adjectives/participles		
no element preceding the noun	5	2
additional element preceding the noun	4	6
individual-level adjectives		
no element preceding the noun	0	3
additional element preceding the noun	0	5
total	28	20

Among the first two categories, source text influence does not seem to be the case: out of the 18 adverb-like adjectives in postposition, only 3 follow Latin, and out of the 5 adjectives governing complements, only one is postposed in the original. This is consistent with what Fischer (2001) suggests for texts which her

analysis does cover, namely that postposition is more likely when the adjective shows ‘verbal’ properties. Another 17 cases of postposition are stage-level adjectives and participles, of which 8 are also postposed in Latin, but this category also qualifies as ‘verbal’, so the postnominal placement of these modifiers would be expected regardless. Additionally, in 10 cases, the noun is further modified by an element placed to the left, so the desire to avoid a stack might have been another trigger of postposition. (14) is thus an example of adjectival postposition potentially lending itself to a three-fold explanation.

- (14) (a) *clæne neten eodorcende*
clean animal ruminating
(b) *mundum animal ruminando*
clean animal ruminating
(cobede,Bede_4:25.346.1.3478)

But most importantly, postposition once again can be successfully accounted for through reference to language-internal tendencies, rather than to source-text dependence. Latin influence may appear to play a more prominent role in the case of postposed individual-level adjectives: there are 8 such adjectives in Bede, and all of them render source-text NPs with postnominal adjectives. However, 5 of them postmodify nouns which are additionally premodified, and, interestingly, this extra premodification is a clear departure from the Latin original. Witness (15) and (16), which are representative of the group of the 5 individual-level adjectives with an extra premodification of the head noun:

- (15) (a) *micel leoht heofonlic*
great light heavenly
(b) *lucem caelitus*
light heavenly
(cobede,Bede_3:6.174.18.1710)
- (16) (a) *crispe loccas fægre*
curly locks fair
(b) *capillis pulcherrime crispis*
hair fair curly
(cobede,Bede_5:2.390.14.3890)

In (15), the translator adds material absent from the original, while in (16) the original word order is changed. It is possible that the translator may indeed have wanted to copy the Latin order, i.e. the postnominal placement of an adjective, but since placing individual-level adjectives after nouns was somewhat unnatural in OE, he might have added a prenominal adjective to make it look as if putting the other adjective to the right of the noun was motivated by the need to avoid a stack. Therefore, these examples are probably best treated with caution in terms of explaining them exclusively through reference to a Latin source text: while the

desire to follow Latin may have been the case, an additional premodification may have been required to accommodate it. In any case, (15), (16), and the likes are by no means “very strict” Latin calques, as suggested by Fischer (2001). All in all, 45 out of 48 instances of postposed adjectives in Bede either display ‘verbal’ properties or their position can be explained by lack of stacking potential in OE, or both these triggers operate concurrently. Therefore, this translation has only 3 cases of postnominal adjectives which cannot be explained away by any of the factors discussed, and the influence of the source text seems to be the only trigger of postposition.

Table 5 below shows the breakdown of postnominal adjectives in the Pastoral Care.

Table 5: Contexts for adjectival postmodification in Pastoral Care

	independent of Latin	following Latin
adverb-like adjectives	1	0
adjectives governing complements	0	1
stage-level adjectives/participles		
no element preceding the noun	7	0
additional element preceding the noun	4	0
individual-level adjectives		
no element preceding the noun	1	0
additional element preceding the noun	0	1
total	13	2

This text, despite Fischer’s (2001) misgivings, appears to be virtually free of Latin influence in respect to adjectival postposition. Altogether, only 2 out of 15 postnominal adjectives/participles copy the original word order, and in both these cases the explanation can be sought outside the source text dependence: one occurrence is an adjective with further complementation, and in the other, shown in (17), although the adjective receives individual-level reading, the noun is additionally premodified.

- (17) (a) *feower hringas ælgyldene*
 four rings golden
 (b) *quatuor circulos aureos*
 four rings golden
 (cocura,CP:22.169.19.1153)

No instance from among the 11 postnominal stage-level adjectives or participles relies on the source text. This modifier type is the most frequent one to be found in postposition in the Pastoral Care, so the pattern of adjectival modification in this text appears to be consistent with Fischer’s (2001) model.

Table 6 details the distribution of postnominal modifiers in Gregory’s Dialogues:

Table 6: Contexts for adjectival postmodification in Gregory's Dialogues

	independent of Latin	following Latin
adverb-like adjectives	3	3
adjectives governing complements	2	2
stage-level adjectives/participles		
no element preceding the noun	4	1
additional element preceding the noun	0	4
individual-level adjectives		
no element preceding the noun	1	0
additional element preceding the noun	2	0
total	12	10

In this text, the proportions of Latin-independent to Latin-dependent postnominal adjectives are rather even: 12 such modifiers show no source-text influence but another 10 do. However, in the latter group, factors other than a syntactic calque might be invoked in every single case: there are 3 postposed adjectives interpreted adverbially and 2 with further complementation, while the remaining 5 refer to temporary qualities (with 4 additionally modifying nouns which are already premodified). These categories are exemplified in (18), (19), and (20), respectively.

- (18) (a) *tone deað neah*
the death near
(b) *morte vicina*
death near
(cogregdC,GDPref_and_3_[C]:36.249.3.3518)

- (19) (a) *spyrtan fulle metes*
baskets full of-food
(b) *sportas duas plenas alimentis*
baskets two full of-food
(cogregdC,GDPref_and_3_[C]:14.203.3.2657)

- (20) (a) *tyllicum were sweltendum*
such man dying
(b) *viro moriente*
man dying
(cogregdC,GDPref_and_4_[C]:40.327.2.4925)

There are three adjectives receiving individual-level interpretation, which as such would not be expected to occur after the noun. None of these copy Latin, but two modify nouns which are additionally premodified:

- (21) (a) *hæpenum mannum langbeardiscum*
pagan men Lombardian
(b) *Langobardis*

Lombardians
(cogregdC,GDPref_and_3_[C]:27.232.9.3239)

In sum, all but one postnominal adjective in Gregory's Dialogues are not unexpected in their position, and even if some of these adjectives follow the Latin original, no cases are recorded where source-text dependence would have to serve as the sole motivation for postposition.

Table 7 presents the patterning of adjectival postposition in the West Saxon Gospels.

Table 7: Contexts for adjectival postmodification in West Saxon Gospels

	independent of Latin	following Latin
adverb-like adjectives	1	1
adjectives governing complements	3	6
stage-level adjectives/participles		
no element preceding the noun	4	3
additional element preceding the noun	2	3
individual-level adjectives (no element preceding the noun)		
no element preceding the noun	0	0
additional element preceding the noun	0	0
total	10	13

In the Gospels, the majority of postnominal adjectives happen to follow the source syntax, but postposition could once again be anticipated based on the intra-linguistic variables in place: 7 out of the 13 postnominal adjectives which copy the original text are either interpreted adverbially or further complemented, while the remaining 6 refer to incidental properties (with some head nouns additionally premodified). Examples of all three types of postnominal adjectives are given in (22)-(24) respectively.

- (22) (a) *seofon wilian fulle*
seven baskets full
(b) *septem sportas plenas*
seven baskets full
(cowsgosp,Mt_[WSCp]:15.37.1062)
- (23) (a) *witega mihtig on spæce & on weorce*
prophet mighty in word and work
(b) *propheta potens in opere et sermone*
prophet mighty in word and work
(cowsgosp,Lk_[WSCp]:24.19.5674)
- (24) (a) *se ligræsc lyhtende*
lightning lightening
(b) *fulgur coruscans*
lightning lightening
(cowsgosp,Lk_[WSCp]:17.24.5068)

Of note is the complete absence of postnominal adjectives denoting inherent qualities: that no such adjectives follow their head nouns further reinforces the impression that the motivation for adjectival postposition in Old English should be sought in the tendencies characteristic of this language, rather than in a potential foreign influence.

Table 8 provides the context for adjectival postposition in the other scriptural translation, the Heptateuch.

Table 8: Contexts for adjectival postmodification in the Heptateuch

	independent of Latin	following Latin
adverb-like adjectives	4	1
adjectives governing complements	3	4
stage-level adjectives/participles		
no element preceding the noun	0	3
additional element preceding the noun	0	0
individual-level adjectives		
no element preceding the noun	1	0
additional element preceding the noun	0	1
total	8	9

As with the West Saxon Gospels, there are more postnominal adjectives which copy the source syntax than those which do not. However, there are no cases of adjectival postposition where Latin would have to be invoked as the only motivation for such placement: out of 9 postposed adjectives corresponding to similarly arranged NPs in the original, 1 is adverbial, 4 govern complements, and 3 are stage-level, while the only postposed individual-level adjective comes after the noun with additional premodification, shown in (25):

- (25) (a) *næddrena attor unhalwendlic*
of-serpents venom incurable
(b) *venenum aspidum insanabile*
venom of-serpents incurable
(cootest, Deut:32.33.5099)

In this OE example, the original genitive is moved to the left of the noun, but the adjective remains in postposition, potentially to avoid having the two modifiers side by side. There is one other individual-level adjective in postposition, shown in (26): it follows an unmodified noun and is not a Latin calque, so no factors considered in this study can explain its position.

- (26) (a) *Assan frumcennedne*
donkey firstborn
(b) *primogenitum asini*
firstborn donkey
(cootest, Exod:34.20.3593)

Aside from this instance, however, the postnominal placement of 16 out of 17 adjectives in the Heptateuch is not unexpected, and in no case is Latin source-text influence the only potential factor informing postposition.

The last translated text considered in this study was Benedictine Rule, which only featured the following two postnominal adjectives:

- (27) (a) *wyrðmynt genoh*
honor enough
(b) *honorem*
honor
(cobenrul,BenR:53.85.1.960)
- (28) *FEDERYS HEALICES*
Fathers holy
(cobenrul,BenR:73.133.20.1287)

The adjective in (27) is interpreted adverbially and does not follow the source – which has an unmodified noun in the corresponding passage – while the adjective in (28) is individual-level; it is part of the closing formula which is absent from the original and postposition might have been employed for stylistic reasons; in any case, the word order is not copied from the source.

Table 9 presents the aggregated numbers for all types of postnominal adjectives across all translated texts included in this study and lists potential triggers of postposition for each category.

Table 9: Contexts for adjectival postmodification in translated texts selected for the study

context for postposition	count	trigger
adverb-like adjectives		
independent of Latin	25 (20%)	adverbial nature
following Latin	8 (6%)	adverbial nature, calque
adjectives governing complements		
independent of Latin	12 (9%)	complement
following Latin	14 (11%)	complement, calque
stage-level adjectives/participles (no element preceding the noun)		
independent of Latin	20 (16%)	stage-level reading
following Latin	9 (7%)	stage-level reading, calque
stage-level adjectives/participles (additional element preceding the noun)		
independent of Latin	10 (8%)	stage level reading, premodification
following Latin	13 (10%)	stage-level reading, premodification, calque
individual-level adjectives (no element preceding the noun)		
independent of Latin	4 (3%)	unknown
following Latin	3 (2%)	calque
individual-level adjectives (additional element preceding the noun)		
independent of Latin	2 (2%)	premodification
following Latin	7 (6%)	premodification, calque

It turns out that, while the Old English translations follow their Latin sources with respect to the postnominal placement of the adjective in as many as 54 out of 127 instances, it is only on three occasions that foreign influence is the only potential trigger of postposition (while on another four the postnominal placement was not anticipated). These numbers suggest that the postnominal placement was largely motivated by language-internal factors, an observation further supported by the fact that postposition in those instances where OE modifies Latin is almost invariably associated with the same contexts, and apparently non-translations display a very similar behavior: the aggregated numbers for postnominal adjectives in this group of texts are presented in Table 10:

Table 10: Contexts for adjectival postmodification in non-translations selected for the study

context for postposition	count	trigger
adverb-like adjectives	15 (8%)	adverbial nature
adjectives governing complements	59 (31%)	complement
stage-level adjectives/participles (no element preceding the noun)	55 (29%)	stage-level reading
stage-level adjectives/participles (additional element preceding the noun)	14 (7%)	stage level reading, premodification
individual-level adjectives (no element preceding the noun)	18 (9%)	unknown
individual-level adjectives (additional element preceding the noun) (+ additional modification of the second adjective)	21 (+9) (16%)	premodification

In 143 out of 191 instances of postnominal adjectives, ‘verbal’ interpretation (in the sense of Fischer 2000, 2001) is possible, in that the adjective functions adverbially, governs a complement, or refers to a temporary state (and is sometimes additionally accompanied by another, prenominal adjective). Examples follow in (29)-(32).

- (29) *þæs halgan gastes cyme towardne*
 this holy ghost’s coming to-come
 (coblick,HomS_46_[BIHom_11]:117.18.1488)
- (30) *cnihitas swiðe gelyfede on þone soðan God*
 knights very faithful on the true God
 (cocathom2, ÆCHom_II_1:9.230.198)
- (31) *þis folc wepende*
 these people crying
 (coblick,LS_20_[AssumptMor[BIHom_13]]:143.86.1744)

- (32) *an þearfende man nacod*
 one needy man naked
 (comart2,Mart_2.1_[Herzfeld-Kotzor]:No11,A.4.106)

The other 48 adjectives have been classified as individual-level, but as many as 30 of these modify additionally premodified nouns (with the second adjective additionally premodified in 9 cases), which is a context potentially favoring the postposition of a second adjective (cf. Spamer 1979, Sampson 2010). Examples are shown in (33)-(35).

- (33) *Godes encgel haligne*
 God's angel holy
 (coaelive, ÆLS[Agnes]:131.1801)
- (34) *fijsuna ful cene*
 five sons very cruel
 (coaelive, ÆLS_[Maccabees]:208.4952)
- (35) *anne gungne Brytiscne man swiðe æðelne*
 one young British man very noble
 (cochronE,ChronE_[Plummer]:501.1.166)

Out of the 18 recalcitrant instances remaining, as many as 15 are concentrated in the texts by Aelfric, whose prose is known for “a more rhythmical and alliterative style” (Hill 2009: 49), so maybe these adjectives were placed postnominally for stylistic reasons. In any case, postposition in non-translations is associated with the adjective’s ‘verbalness’ or the head noun’s additional premodification in 91% of the cases, while in translations the very same contexts account for postposition in 94% of the cases, as indicated by Table 11.

Table 11: Contexts for adjectival postmodification in translated and non-translated texts selected for the study

Context of postposition	Translations	Non-translations
adverb-like adjectives	33 (26%)	15 (8%)
adjectives governing complements	26 (20%)	59 (31%)
stage-level adjectives/participles (no element preceding the noun)	29 (23%)	55 (29%)
stage-level adjectives/participles (additional element preceding the noun)	23 (18%)	14 (7%)
individual-level adjectives (no element preceding the noun)	7 (6%)	18 (9%)
individual-level adjectives (additional element preceding the noun)	9 (7%)	30 (16%)
Total	127	191

Therefore, there is little to suggest that source-text interference had anything to do with the postnominal placement of OE adjectives, which seems to be in equal measure linked to particular contexts in both translated and non-translated texts.

4. Discussion

The reliance of certain texts (e.g. Bede or the Pastoral Care) on their Latin originals with respect to adjectival postposition, postulated by some authors, appears not to be the case. It is true that, in certain cases, the string of a noun followed by an adjective/participle corresponds to the similarly arranged NP in the Latin source text. However, these cases typically see the presence of at least one more factor potentially triggering postposition, and as few as 3 examples have been found where the source text interference appears to be the only explanation for placing an OE adjective after its head noun. But even if all cases in which the original arrangement is copied are treated as potentially suspicious in the context of possible calques, they make up 42% of all postnominal adjectives in translated texts, which means that 58% of the time postmodification has nothing to do with the Latin original, and, at the same time (bar 4 cases), is linked with the presence of postposition triggers listed in the relevant literature. Therefore, in general, in both translated and non-translated texts, the postposition of adjectives – unless caused by the presence of the noun’s additional premodification (cf. Spamer 1979, Sampson 2010) – seems to be related to their ‘verbal’ nature, in the sense of Fischer (2000, 2001), i.e. postnominal adjectives typically reference non-inherent qualities, such as temporary states or adverbial properties, or govern complements.

This last category is classified as ‘verbal’ according to Fischer (2001: 260), since the ability to take a complement “makes clear that the adjective is not attributive.” The examples the author adduces do go a long way toward proving her point (see Fischer 2001: 259-60), but her account is by no means exhaustive. Consider the following examples of postnominal adjectives modified by further complements:

(36) *sum creopere lama fram cildhade*
 some cripple lame from childhood
 (coalive, *ÆLS*[Peter's_Chair]:25.2277)

(37) *culfre swa hwit swa snaw*
 dove as white as snow
 (comart3, *Mart_5*_[Kotzor]:Oc31,A.6.2078)

These adjectives may well be considered more ‘verbal’ than ‘nominal’ in that they allow prepositional and dative complements, but their ‘verbalness’ does not always appear to be about their ‘stage-level’ reading. It seems that the qualities described by the adjectives above refer to enduring properties rather than

temporary states: in (36), the person described is not disabled under some specific circumstances, but the affliction is permanent, while in (37), the adjective denotes the dove's hue, and likening it to snow does not make it less inherent to the bird in question. As mentioned earlier, Fischer (2000, 2001, 2004) rejects weight as a potential factor in postposition in such cases but herself concedes that as regards, for instance, the PP complementation, the adjective and the prepositional phrase which complements it never occur before the noun, but always come after it. Heaviness of the phrase would seem to provide sufficient explanation without resorting to the supposed stage-level properties of the adjective, and the situation would not differ much in that respect from Present Day English, and, for that matter, also from Middle English (see e.g. Fischer 1992, 2004, Raumolin-Brunberg 1994).

In this context, it is interesting to notice that the two scriptural translations scrutinized in this study, the West Saxon Gospels and the *Heptateuch*, display visibly higher proportions of postposed adjectives governing complements to the remaining postnominal modifiers than do the rest of the translated and non-translated texts, as summarized in Table 12:

Table 12: Proportions of heavily-complemented adjectives to other postnominal adjectives in scriptural translations and non-scriptural texts

	adjectives governing complements	other adjectival modifiers	Total
scriptural translations	16 (40%)	24 (60%)	40 (100%)
non-scriptural translations	10 (12%)	75 (88%)	85 (100%)
original texts	59 (31%)	134 (69%)	193 (100%)
Total (mean)	28%	72%	

These higher proportions might again raise questions as to whether Latin may have played a part in where these adjectives were placed. However, it is unlikely that they were postposed to calque the original: while in the biblical translations the correspondence to the Latin source is indeed observable in 10 cases, another 6 are independent of the original, and, additionally, postnominal heavily-complemented adjectives are the most numerous single group among all categories of postnominal adjectives in non-translations, numbering 59. Also, as mentioned earlier, Fischer (2001), and also Pysz (2009), report a near-complete absence of heavily-complemented adjectives preceding the noun, so these are not quite unexpected in postposition – and neither are non-complemented adjectives denoting temporary states, but for some reason, biblical translations prefer the syntactic context, rather than the semantic one. There are 17 postposed adjectives in the entire *Heptateuch*, with further modification observed to correlate with as many as 7 of them, that is in 41% (against the global mean of 28%), while stage-level adjectives in postposition seem to be avoided by Ælfric and his team: there are only three of them in the *Heptateuch* (i.e. 17%, against the global mean of 38%), and two, presented in (38) and (39), function as subject complements – these would also be postposed in Present Day English.

- (38) *Ða feol Abram **astreht** to eorðan*
 Then fell Abraham stretched to ground
 (cootest, Gen:17.3.634)
- (39) *þær lið Lia **bebyriged***
 there lay Leah buried
 (cootest, Gen:49.31.2159)

In the *West Saxon Gospels*, as many as 9 out of 23 postposed adjectives take further complements (39%, against the global mean of 28%). In a sense, the scriptural translations seem closer to the Present-Day English situation, where the heaviness of the phrase is what primarily informs postposition, while the adjective's semantics seems secondary. But even in OE, even if the tendency to place stage-level adjectives to the right of the noun was somewhat more pronounced, it was probably little more than a minority pattern: if the heavily-complemented adjectives are not counted, then the number of postnominal adjectives in the sample studied is 233, while e.g. Sampson (2010) reports more than 30,000 prenominal adjectives in the YCOE corpus. Apparently, postposition was in decline already in OE – at least in its latter stages, which are recorded in writing – and for some reason, the scriptural translations seem to anticipate the subsequent developments, i.e. a decided preference of 'syntactic' postposition, most accurately. One explanation may be chronology, seeing as the scriptural translations are rather late texts, or at least later than the non-scriptural translations: the Heptateuch and the Gospels are placed in the O3 period (950-1050), while Bede, Gregory's Dialogs, and the Pastoral Care are O2 (850-950). Also, the vast majority of the original compositions come from the O3 period, and in both cases, i.e. scriptural translations (later) vs. non-scriptural translations (earlier), and non-scriptural translations (earlier) vs. original compositions (later), the differences in the frequency of heavily complemented adjectives are statistically significant (Fisher's exact test, two-tailed, $p < 0.001$). Therefore, the biblical texts may be simply treated as one group among the later OE texts which was displaying the same diachronic change. Still, although not statistically significant, the difference between scriptural translations and non-translated texts, i.e. two groups falling into the same period, is noticeable, with heavily complemented adjectives making up 40% of all postposed adjectives in the former and only 31% in the latter set of texts. The fact that the biblical translations apparently tended toward what was becoming the most natural context for postposition even more prominently than non-scriptural texts may be explained by their function, which was to ensure that the word of God be imparted to common folk. Stanton (2002) notices that e.g. Ælfric originally vowed to preserve the Bible's original word order, in keeping with Jerome's conviction, dating back to the 5th century, that works of divine provenance should not be tinkered with. Consequently, Ælfric intended to serve the unvarnished word of God to the English people, rather than translate 'sense for sense', having witnessed numerous instances of erroneous readings among the unlearned (ibid. 138). But then, he

concluded that “correct, idiomatic English is the best protection against misunderstanding” (ibid.: 137), so in his scriptural translations the reader gets “a language close to normal everyday speech” (ibid.: 167).

Scriptural translations may therefore most prominently exhibit the strongest tendencies of the language, which, in the case of adjectival postposition, primarily saw the postnominal placement of heavily-complemented adjectives – even if globally, across all texts, this context only explains postposition in 28% of instances. It appears, then, that studying the word order on the level of noun phrase – at least in the case of the adjective’s relative position to the head noun – does not require excluding translation, some of which do exhibit certain peculiarities, but these do not necessarily result from the influence of the foreign syntax, being instead effects of diachronic change and the text’s function. Therefore, translations may be as valuable in terms of providing insight into patterns favored by a language as original compositions (at least for Old English).

5. Conclusions

This study set out to determine if the postnominal placement of adjectives in Old English may have been influenced by the Latin source texts’ interference. A question thus formulated has been answered in the negative. In general, it has been observed that while the proportions of particular contexts favoring adjectival postmodification may differ across texts, these are essentially the same contexts, and include the stage-level or adverbial interpretation of the adjective, the additional premodification of the head noun, and further complementation of the postnominal adjective. This last factor, although seen as testifying to the verbal character of the adjective by Fischer (2000, 2001), probably triggered postposition in line with the end-weight principle. In any case, it should be considered as an important trigger of adjectival postposition, together with the remaining syntactic and semantic factors (mentioned above and in the relevant literature on the subject, such as Spamer 1979, Haumann 2003, Sampson 2010), which seem to hold in equal measure for translated and non-translated texts. The former, therefore, may be seen as valid sources of linguistic information and do not have to be excluded by default, as long as they are a subject of a systematic comparison with their source material (cf. Cichosz et al. 2016).

References

- Bartnik, A. (2009). *Noun Phrase structure in Old English. Quantifiers and other functional categories*. Lublin: Wydawnictwo KUL.
- Cameron, M. (1983). Bald’s Leechbook: Its Sources and Their Use in its Compilation. *Anglo-Saxon England*, 12, 153-182. <https://doi.org/10.1017/S0263675100003392>
- Cichosz, A., Gaszewski, J., and Pęzik, P. (2016). *Element Order in Old English and Old High German Translations*. Amsterdam/Philadelphia: Benjamins. <https://doi.org/10.1075/nss.28>

- Cichosz, A., Gaszewski, J., Peżik, P., and Grabski, M. (2014). Old English – Old High German – Latin Corpus (ENHIGLA). University of Łódź (available online at <http://pelcra.pl/enhigla/corpus>)
- Crisma, P. (1999). Nominals without the article in the Germanic Languages. *Rivista di Grammatica Generativa*, 24, 105–25.
- Fischer, O. (2012). The status of the postponed 'and-adjective' construction in Old English: Attributive or predicative? In D. Denison, R. Bermúdez-Otero, C. McCully, and E. Moore (eds.), *Analysing Older English (Studies in English Language)* (251-284). Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9781139022170.023>
- Fischer, Olga. (2004). Developments in the category adjective from Old to Middle English. *Studies in Medieval Language and Literature* 19. 1-36.
- Fischer, O. (2001). The position of the adjective in (old) English from an iconic perspective. In O. Fischer and M. Nänny (eds.), *The Motivated Sign* (249-276). Amsterdam/Philadelphia: John Benjamins. <https://doi.org/10.1075/ill.2.19fis>
- Fischer, O. (2000). The position of the adjective in Old English. In R. Bermudez-Otero et al. (eds), *Generative Theory and Corpus Studies. A Dialogue from 10 ICEHL* (153-182). Berlin: Mouton de Gruyter. <https://doi.org/10.1515/9783110814699.153>
- Fischer, O. (1992). Syntax. In N. Blake (ed.), *The Cambridge History of the English Language*, Vol. 2: 1066-1466 (207-408). Cambridge: Cambridge University Press.
- Fischer, O., van Kemenade, A., Koopman, W., and van der Wurff, W. (2000). *The Syntax of Early English*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511612312>
- Fischer, O and van der Wurff, W. (2006). Syntax. In R. Hogg and D. Denison (eds.), *A History of the English Language* (109-198). Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511791154.004>
- Haumann, D. (2010). Adnominal adjectives in Old English. *English Language and Linguistics*, 14, 53-81. <https://doi.org/10.1017/S1360674309990347>
- Haumann, D. (2003). The postnominal 'and adjective' construction in Old English. *English Language and Linguistics*, 7(1), 57-83. <https://doi.org/10.1017/S1360674303211011>
- Hill, J. (2009). Aelfric: his life and works. In Hugh Magennis and Mary Swan (eds.), *A companion to Aelfric*. Leiden, NL: Brill, 35-66. <https://doi.org/10.1163/ej.9789004176812.i-468.14>
- Irvine, S. (2012). Beginnings and transitions: Old English. In L. Mugglestone, (ed.), *The Oxford History of English*. Oxford: Oxford University Press, 39-74.
- Pysz, A. (2009). *The Syntax of Prenominal and Postnominal Adjectives in Old English*. Cambridge: Cambridge Scholars.
- Randall, B., Kroch, A., and Taylor, A. (2005-2013). CorpusSearch2. (Available online at <http://corpussearch.sourceforge.net/CS.html>).
- Raumolin-Brunberg, H. (1994). The position of adjectival modifiers in Late Middle English noun phrases. In U. Fries, G. Tottie, and P. Schneider (eds.), *Creating and Using English Language Corpora. Papers from the Fourteenth International Conference on English Language Research on Computerized Corpora, Zurich 1993* (159-168). Amsterdam: Rodopi.
- Ringe, D and Taylor, A. (2014). *The Development of Old English*. Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199207848.001.0001>
- Sampson, S. A. (2010). Noun Phrase Word Order Variation in Old English Verse and Prose. Unpublished Ph.D. Dissertation. Ohio State University.
- Spamer, J. (1979). The development of the definite article in English: A case study of syntactic change. *Glossa*, 13, 241–250.
- Stanton, R. (2002). *The Culture of Translation in Anglo-Saxon England*. Cambridge: D.S. Brewer.
- Taylor, Ann, Warner, A., Pintzuk, S., and Beths, F. (2003). The York-Toronto-Helsinki Parsed Corpus of Old English Prose (YCOE). Department of Linguistics, University of York. Oxford Text Archive (available online at <http://www-users.york.ac.uk/~lang22/YcoeHome1.htm>).
- The Old English History of the World – Malcolm R. Godden | Harvard University Press. (n.d.). Retrieved from <http://www.hup.harvard.edu/catalog.php?isbn=9780674971066>

- Timofeeva, O. (2010). *Non-finite Constructions in Old English, with Special Reference to Syntactic Borrowing from Latin*. Helsinki: Mémoires de la Société Néophilologique de Helsinki.
- Trips, C. (2015). *English Syntax in Three Dimensions*. Berlin/Boston: De Gruyter. <https://doi.org/10.1515/9783110290097>
- Vendler, Z. (1967). The Grammar of Goodness. In Z. Vendler (ed.), *Linguistics in Philosophy* (172-195). Ithaca: Cornell University Press. <https://doi.org/10.7591/9781501743726>