Verbal Inflection, Feature Inheritance, and the Loss of Null Subjects in Middle English

doi: 10.4036/iis.2014.103

Interdisciplinary Information Sciences Vol. 20, No. 2 (2014) 103–120

ISSN 1340-9050 print/1347-6157 online
DOI 10.4036/iis.2014.103

Verbal Inflection, Feature Inheritance, and the Loss of Null Subjects in Middle English

Hiroyuki NAWATA*

Faculty of Education, Shimane University, Matsue 690-8504, Japan

Received October 22, 2013; final version accepted February 15, 2014

This paper investigates how null subjects, generally termed *pro* in the literature, were licensed and lost historically in English, with special emphasis on the role of verbal inflectional morphology. It is revealed through a corpus search that *pro* was licensed as a null topic in Old English and Early Middle English but subsequently lost in Late Middle English. This coincides with the period in which English underwent a drastic typological change, going from a topic-prominent language to a subject-prominent language. In order to relate these simultaneous changes, I maintain that the loss of *pro* and the typological change to the language both resulted from the shift of ϕ-features from Top(ic) to Fin(ite) within the hierarchy of fine-grained functional heads in the CP domain à la Rizzi (1997), and that this is ultimately attributable to the decline of verbal inflectional morphology for number agreement. Thus, as far as the analysis advanced in this paper is successful, the changes under discussion present an intriguing case of syntax–morphology interface in the domain of language change, where micro-level morphological attrition finally results in a large-scale typological shift of a language.

KEYWORDS: null subjects, Middle English, verbal inflection, feature inheritance, syntax–morphology interface

1. Introduction

This paper sheds light on some syntactic effects of morphological change in the history of English, specifically, the effect of the decline of verbal inflection on the demise of phonetically null subjects (henceforth referred to as *pro*), and attempts to bring some new insights to this issue, drawing on both empirical and theoretical points of view.[1] Empirically, I will retrieve data from a syntactically annotated historical corpus and specify the period at which *pro* ceased to be allowed in English. On the theoretical side, I will investigate how mechanical proposals for synchronic grammar—the fine structure of the left periphery (Rizzi (1997)), feature inheritance (Chomsky (2008)), and Distributed Morphology (DM; Halle and Marantz (1993), Embick and Noyer (2007) and others)—work to account for diachronic changes.

The general guideline for the theory of language change on which the analysis presented in this paper is based is the Strong Minimalist Thesis (SMT; Chomsky (2004) et seq.), which claims that there is no room for crosslinguistic variation in the computational system of human language, that is, in its syntax, and that all linguistic variation, both synchronic and diachronic, should be explained in terms of how the output of syntactic computation is "externalized" at the sensorimotor interface. This amounts to saying that SMT presupposes that linguistic change as recorded in history should be distinguished from the evolution of language at the genomic level. This point is clearly stated in the following quotes from Berwick and Chomsky (2011):

(1) a. "There is sometimes an unfortunate tendency to confuse literal evolutionary (genomic) change with historical change, two entirely distinct phenomena." (Berwick and Chomsky (2011: 38))
b. "there is very strong evidence that there has been no relevant evolution of the language faculty since the trek from Africa some 50,000 years ago" (ibid.: 38)
c. "Parameterization and diversity … would be mostly—possibly entirely—restricted to externalization." (ibid.: 37)

On the basis of this general guideline, I will assume that there has been no change in the history of English with respect to the mechanism of syntactic computation or the basic clause structure, and maintain that synchronic and diachronic variation in the distribution of *pro* can be accounted for with the following parameters, all of which are related to the "externalization" of syntactic structures: (i) the distribution of ϕ-features among functional categories, (ii) the correspondence between morphosyntactic and phonological features in the domain of verbal inflection, and (iii) the

*Corresponding author. E-mail: nawata@edu.shimane-u.ac.jp

correspondence rules for personal pronouns. I claim that the diachronic changes in parameters (i) and (ii) have resulted from the decline of the verbal inflectional morphology.

This paper is organized as follows. First, section 2 briefly reviews previous studies on the distribution of *pro* in Old English (OE), reports the results of a corpus survey on the occurrence of *pro* in Middle English (ME), and presents the issues to be investigated. Section 3 introduces a theoretical framework by establishing the basic clause structures of OE and Early Middle English (EME: 1150-1350) and a mechanism for realizing verbal inflection. Parametric variation concerning feature inheritance naturally follows from this framework. Then, section 4 proposes licensing conditions on *pro* and on this basis explains the distribution of *pro* in EME and its demise in Late Middle English (LME: 1350-1500), in accordance with the spirit of SMT. Finally, section 5 provides some concluding remarks. Also provided is an appendix in which some consequences of the proposed analysis for the "(de)grammaticalization" of personal pronouns in the history of English are mentioned.

2. Data and Issues

There is a long-standing debate in the literature about the extent to which *pro* was permissible in OE. For example, Hulk and Kemenade (1993, 1995) argue that OE allowed only expletive *pro*, whereas Gelderen (2000) maintains that referential as well as expletive *pro* can be observed in OE. The recent expansion and development of electric corpora has enabled a quantitative approach to this issue. Walkden (2011), searching the *York-Toronto-Helsinki Parsed Corpus of Old English Prose* (Taylor et al. (2003)) and the *York-Helsinki Parsed Corpus of Old English Poetry* (Pintzuk and Plug (2001)), demonstrates that referential pronominal subjects could indeed be dropped in OE and that the distribution of *pro* exhibits the following three asymmetries: (i) frequency of *pro* varies among individual texts, (ii) *pro* is more frequently observed in main clauses than in subordinate clauses, and (iii) *pro* is predominantly interpreted as referring to third-person entities, while first- and second-person *pro* is rare. The last is also pointed out by Gelderen (2000), who refers to this phenomenon as *person split*.

In order to investigate whether or not Walkden's (2011) observation applies to ME and to specify the period in which *pro* disappeared, I searched the *Penn-Helsinki Parsed Corpus of Middle English*, Second Edition (PPCME2; Kroch and Taylor (2000)) for *pro* and overt pronominal subjects in main and subordinate clauses. The overall results are summarized in Table 1. It is clear from this table that the rate of occurrence of *pro* varies considerably among individual texts in ME as well as in OE. Shaded cells show that the relevant files include more than two tokens of *pro* and that the occurrence rate exceeds 2%. Essentially following the criterion adopted by Walkden (2011), let us assume that *pro* was grammatically allowed in these texts. Since the shaded cells are all found in EME (M1 and M2), it can be concluded that *pro* ceased to be licensed by LME at the latest.

Next, let us examine whether or not the asymmetry between main and subordinate clauses, which Walkden (2011) claims holds in OE, is also observed in EME. Extracting from Table 1 the results for texts where *pro* was allowed, we obtain Table 2. The total occurrence rate of *pro* in main clauses is 7.45%, whereas that in subordinate clauses is 2.05%. The result of statistical hypothesis testing indicates that *pro* occurs significantly more frequently in main clauses than in subordinate clauses ($\chi^2 = 84.30$, $df = 1$, $p < .001$). To examine more closely why this asymmetry arises, I investigated the distribution of word orders in embedded clauses in texts where *pro* was grammatically allowed. Table 3 summarizes the results.[2] In EME, while main clauses continued to hold verb-second (V2) order in the OE period, in subordinate clauses innovative verb-medial order and old-fashioned verb-final order were mixed (cf. Fischer et al. (2000)). However, the results in Table 3 strongly suggest that subordinate clauses tolerated *pro* only when they had a verb-medial order. Though one instance of *pro* was found in a verb-final clause in *Trinity Homilies*, this is best put aside as an exceptional case, because this text may not accurately reflect the grammar of EME, as we will see below. Thus, it can be concluded that the asymmetry between main and subordinate clauses observed in Table 2 results from the fact that only a subset of word order patterns in subordinate clauses licensed *pro*.

Finally, let us proceed to consider the person split for the interpretation of *pro*. Among the texts listed in Tables 2 and 3, *Ancrene Riwle* and *Trinity Homilies* are particularly productive of *pro*. Thus, I focused on these texts, classifying the instances of *pro* according to their person interpretation. For the sake of comparison, occurrences of overt pronouns were also counted. The results are summarized in Table 4. In either text, *pro* is mostly interpreted to refer to third-person entities, but the important point is whether or not third-person *pro* occurs more frequently than overt third-person pronouns. Statistical hypothesis testing reveals that the occurrence rate of third-person *pro* against first- and second-person *pro* in *Ancrene Riwle* is significantly higher than that of third-person pronouns against first- and second-person pronouns ($\chi^2 = 31.42$, $df = 1$, $p < .001$), whereas no such significant difference was attested between the occurrence rates of third-person *pro* and third-person pronouns in *Trinity Homilies* ($\chi^2 = 3.43$, $df = 1$, $p = .064$, *ns*). In other words, subjects in the latter text are predominantly in the third person, irrespective of whether they are overtly realized. It should be noted, however, that the language of *Trinity Homilies* is strongly influenced by Latin (Hahn (1999)). As with modern Romance languages such as Italian and Spanish, Latin, the ancestor of these languages, allowed the omission of pronominal subjects rather freely. Thus, it is highly probable that the person distribution of *pro* in *Trinity Homilies* does not exactly reflect the grammar of EME. *Ancrene Riwle*, in contrast, is said to be written in the standard language based on the West Midland dialect of EME (Tolkien (1929)). It can be concluded, then, that the

Table 1. Overall Occurrences of *Pro* and Pronominal Subjects in PPCME2

main clauses

M1 (1150–1250)				M2 (1250–1350)				M3 (1350–1420)				M4 (1420–1500)			
file names	pro	pronoun	rates of pro	file names	pro	pronoun	rates of pro	file names	pro	pronoun	rates of pro	file names	pro	pronoun	rates of pro
cmancriw-1.m1.psd	22	555	3.81%	cmayenbi.m2.psd	9	530	1.67%	cmaelr3.m23.psd	3	203	1.46%	cmaelr4.m4.psd	0	180	0%
cmancriw-2.m1.psd	19	209	8.33%	cmearlps.m2.psd	2	1864	0.11%	cmastro.m3.psd	0	72	0%	cmcapchr.m4.psd	2	1222	0.16%
cmhali.m1.psd	12	87	12.12%	cmkentse.m2.psd	5	54	8.47%	cmbenrul.m3.psd	1	309	0.32%	cmcapser.m4.psd	0	24	0%
cmjulia.m1.psd	10	43	18.87%					cmboeth.m3.psd	0	10	0%	cmedmund.m4.psd	0	129	0%
cmkathe.m1.psd	10	47	17.54%					cmbrut3.m3.psd	7	766	0.91%	cmedthor.m34.psd	1	282	0.35%
cmkentho.m1.psd	1	97	1.02%					cmcloud.m3.psd	0	257	0%	cmfitzja.m4.psd	0	52	0%
cmlamb1.m1.psd	4	78	4.88%					cmctmeli.m3.psd	0	53	0%	cmgaytry.m34.psd	0	20	0%
cmlambx1.mx1.psd	3	338	0.88%					cmctpars.m3.psd	1	385	0.26%	cmgregor.m4.psd	2	542	0.37%
cmmarga.m1.psd	10	50	16.67%					cmedvern.m3.psd	0	223	0%	cmhilton.m34.psd	0	46	0%
cmorm.m1.psd	0	699	0%					cmequato.m3.psd	0	49	0%	cminnoce.m4.psd	0	40	0%
cmpeterb.m1.psd	5	134	3.60%					cmhorses.m3.psd	1	72	1.37%	cmjulnor.m34.psd	0	131	0%
cmsawles.m1.psd	0	7	0%					cmmandev.m3.psd	4	1070	0.37%	cmkempe.m4.psd	1	1337	0.07%
cmtrinit.mx1.psd	36	396	8.33%					cmntest.m3.psd	0	178	0%	cmmalory.m4.psd	8	996	0.80%
cmvices1.m1.psd	5	398	1.24%					cmotest.m3.psd	0	102	0%	cmmirk.m34.psd	7	986	0.70%
								cmpolych.m3.psd	6	720	0.83%	cmreynar.m4.psd	0	43	0%
								cmpurvey.m3.psd	0	466	0%	cmreynes.m4.psd	0	80	0%
								cmwycser.m3.psd	0	844	0%	cmrollep.m24.psd	0	312	0%
												cmrolltr.m24.psd	0	318	0%
												cmroyal.m34.psd	0	83	0%
												cmsiege.m4.psd	0	221	0%
												cmthorn.mx4.psd	2	38	5.00%
												cmvices4.m34.psd	2	138	1.43%

subordinate clauses

M1 (1150–1250)				M2 (1250–1350)				M3 (1350–1420)				M4 (1420–1500)			
file names	pro	pronoun	rates of pro	file names	pro	pronoun	rates of pro	file names	pro	pronoun	rates of pro	file names	pro	pronoun	rates of pro
cmancriw-1.m1.psd	21	1111	1.86%	cmayenbi.m2.psd	14	876	1.57%	cmaelr3.m23.psd	1	423	0.24%	cmaelr4.m4.psd	0	304	0%
cmancriw-2.m1.psd	6	352	1.68%	cmearlps.m2.psd	1	397	0.25%	cmastrom3.psd	0	63	0%	cmcapchr.m4.psd	0	765	0%
cmhali.m1.psd	4	224	1.75%	cmkentse.m2.psd	3	84	3.45%	cmbenrul.m3.psd	1	533	0.19%	cmcapser.m4.psd	0	29	0%
cmjulia.m1.psd	1	92	1.08%					cmboeth.m3.psd	0	17	0%	cmedmund.m4.psd	0	53	0%
cmkathe.m1.psd	1	107	0.93%					cmbrut3.m3.psd	1	754	0.13%	cmedthor.m34.psd	0	375	0%
cmkentho.m1.psd	0	105	0%					cmcloud.m3.psd	1	480	0.21%	cmfitzja.m4.psd	1	50	1.96%
cmlamb1.m1.psd	1	123	0.81%					cmctmeli.m3.psd	0	65	0%	cmgaytry.m34.psd	0	137	0%
cmlambx1.mx1.psd	5	498	0.99%					cmctpars.m3.psd	0	551	0%	cmgregor.m4.psd	1	241	0.41%
cmmarga.m1.psd	0	71	0%					cmedvern.m3.psd	0	311	0%	cmhilton.m34.psd	1	121	0.82%
cmorm.m1.psd	0	1248	0%					cmequato.m3.psd	0	59	0%	cminnoce.m4.psd	0	65	0%
cmpeterb.m1.psd	1	118	0.84%					cmhorses.m3.psd	1	135	0.74%	cmjulnor.m34.psd	0	137	0%
cmsawles.m1.psd	2	25	7.41%					cmmandev.m3.psd	1	842	0.12%	cmkempe.m4.psd	1	1469	0.07%
cmtrinit.mx1.psd	26	772	3.26%					cmntest.m3.psd	0	80	0%	cmmalory.m4.psd	3	544	0.55%
cmvices1.m1.psd	2	646	0.31%					cmotest.m3.psd	0	76	0%	cmmirk.m34.psd	4	1178	0.34%
								cmpolych.m3.psd	0	518	0%	cmreynar.m4.psd	0	51	0%
								cmpurvey.m3.psd	0	354	0%	cmreynes.m4.psd	0	63	0%
								cmwycser.m3.psd	1	1008	0.10%	cmrollep.m24.psd	2	591	0.34%
												cmrolltr.m24.psd	1	396	0.25%
												cmroyal.m34.psd	0	104	0%
												cmsiege.m4.psd	0	89	0%
												cmthorn.mx4.psd	1	63	1.56%
												cmvices4.m34.psd	0	175	0%

Table 2. Occurrences of *Pro* and Pronominal Subjects in EME Texts That Allowed *Pro*

	Main clauses			Subordinate clauses		
	pro	pronoun	rates of *pro*	*pro*	pronoun	rates of *pro*
Ancrene Riwle	41	764	5.09%	27	1463	1.81%
Hali Meidhad	12	87	12.12%	4	224	1.75%
St. Juliana	10	43	18.87%	1	92	1.08%
St. Katherine	10	47	17.54%	1	107	0.93%
The Lambeth Homilies	4	78	4.88%	1	123	0.81%
St. Margaret	10	50	16.67%	0	71	0%
The Peterborough Chronicle	5	134	3.60%	1	118	0.84%
Trinity Homilies	36	396	8.33%	26	772	3.26%
Kentish Sermons	5	54	8.47%	3	84	3.45%
Total	133	1653	7.45%	64	3054	2.05%

person split pointed out by Gelderen (2000) and Walkden (2011) with respect to OE *pro* was still observed in EME, at least in the West Midland dialect.

From the findings of this corpus search, the issues to be considered can be summarized in the following four points:

(2) a. Why did some texts allow *pro* while others did not?
b. Why was *pro* not allowed in subordinate clauses with verb-final order?
c. Why was the interpretation of *pro* restricted to the third person?
d. Why was *pro*, once permissible in EME, lost during LME?

Table 3. Word Orders of Embedded Clauses with *Pro*

	Verb-medial	Verb-final	Ambiguous
Ancrene Riwle	24	0	3
Hali Meidhad	4	0	0
St. Juliana	1	0	0
St. Katherine	1	0	0
The Lambeth Homilies	0	0	1
The Peterborough Chronicle	0	0	1
Trinity Homilies	16	1	9
Kentish Sermons	3	0	0
Total	49	1	14

Table 4. Person Interpretation of *Pro* and Pronominal Subjects

		pro			pronoun		
		matrix	subordinate	total	matrix	subordinate	total
Ancrene Riwle	1st	0	1	1	55	190	345
	2nd	1	0	1	150	324	474
	3rd	40	26	66	459	949	1408
Trinity Homilies	1st	2	4	6	111	166	277
	2nd	2	1	3	12	13	25
	3rd	32	21	53	273	593	866

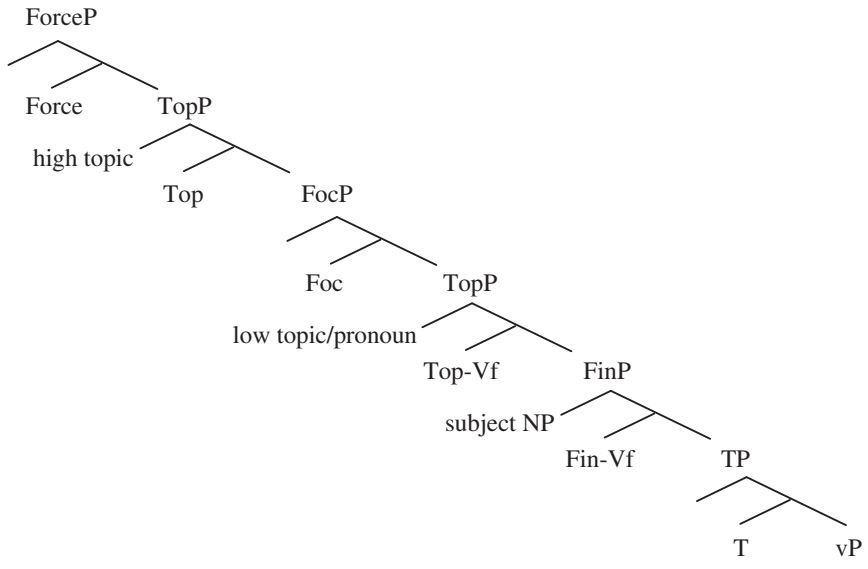
We will return to these issues in section 4. First, however, I would like to introduce the theoretical framework of our analysis in the next section by establishing the basic clause structures of OE and EME and the mechanism for realizing verbal inflection.

3. Morphosyntax of Old and Early Middle English

3.1 Basic Phrase Structure

As the basic clause structure of OE and EME, I will adopt the cartographical structure proposed by Rizzi (1997), where the CP domain is decomposed into ForceP, Top(ic)P, Foc(us)P, and Fin(ite)P.

(3)



As for the positions of the elements that are relevant to the present discussion, I will assume the following (cf. Nawata (2009)): (i) pronominal and nominal subjects occur in Spec-Top and Spec-Fin, respectively, and (ii) finite verbs (represented as Vf in (3)) raise to the head of TopP in main clauses and to the head of FinP in subordinate clauses.

With this clause structure and these subject and finite verb positions in mind, let us consider how the basic word orders in OE and EME will be represented. First, V2 order in main clauses (topic—finite verb—NP subject) can be delineated as in (4).

(4) V2 Order in Matrix Clauses (Topic—Finite Verb—NP Subject)
[$_{TopP}$ *On twam þingum* [$_{Top}$ *hæfde*] [$_{FinP}$ *God* [$_{TP}$ *þæs mannes sawle gegodod*]]]
in two things had God the man's soul endowed
'With two things God had endowed man's soul' (*ÆCHom* I, 1.20.1/Fischer et al. (2000: 114))

It is also well known that when the subject is pronominal, the so-called "verb third (V3)" order (topic—pronominal subject—finite verb) is observed in OE and EME. In this case, the clause-initial topic occupies the Spec of high TopP, while the pronominal subject resides in the Spec of low TopP as a "second topic." Thus, the relevant part of the structure looks like (5).

(5) V3 Order in Matrix Clauses (Topic—Pronominal Subject—Finite Verb)
[$_{TopP}$ *Be ðæm* [$_{TopP}$ *we* [$_{Top}$ *magon*] [$_{FinP}$ *suiðe swutule oncnawan ðæt* . . .]]]
by that we may very clearly perceive that
'By that, we may perceive very clearly that . . .' (*CP* 26.181.16/ibid.: 50)

In subordinate clauses, the finite verb raises as low as the head of FinP; hence, the subject always precedes the finite verb, resulting in a verb-medial order, as illustrated below:[3]

(6) Verb-Medial Order in Subordinate Clauses
[$_{ForceP}$ *ðat* [$_{TopP}$ *we* [$_{FinP}$ [$_{Fin}$ *ne sculen*] [$_{TP}$ *habbe twifeald wæiʒe ne twifeald imett*]]]]
that we not shall have twofold weight nor twofold measuring rod
(CMVICES1, 11.123)

Let us additionally suppose that verb-final order is derived when verb-raising to Fin is followed by remnant movement of TP to Spec-Top, as in (7).

(7) Verb-Final Order in Subordinate Clauses
[$_{ForceP}$ *þo* [$_{TopP}$ [$_{TP}$ *he him seluen habben*] [$_{FinP}$ [$_{Fin}$ *ne mihte*] t_{TP}]]]
though he himself have not might (CMTRINIT, 183.2550)

Of these two word-order patterns in embedded clauses, verb-final order is also observed in OE, while verb-medial order became popular in EME.[4] Thus, the development of the latter may well be accounted for as a consequence of the loss of remnant TP movement, though I will not go into details here.

3.2 Feature Inheritance Parameter

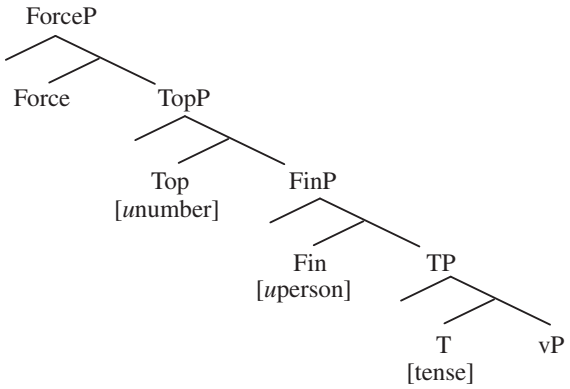
Let us next consider what triggers verb movement. Chomsky (2008) proposes a theory of feature inheritance, which states that tense and ϕ-features originate in the phase head C and are subsequently inherited to the non-phase head T.

(8) Feature Inheritance (Chomsky (2008))
[$_{CP}$ $C_{[\phi][tense]}$ [$_{TP}$ $T_{[\phi][tense]}$]]

This theory implies that a phase head must be accompanied by (at least) one non-phase head.[5] The point to note is that under the articulated phrase structure we adopt here, the phase head is followed by multiple non-phrase heads. In (3) above, Force serves as the phase head, and the other heads, namely, Top, Foc, Fin, and T are regarded as non-phase heads. Then, it immediately follows that a certain range of parameter space will arise with respect to which feature is inherited to which non-phrase head.

I propose that in OE and EME, the uninterpretable number feature ([*u*number]) is inherited to Top, the uninterpretable person feature ([*u*person]) to Fin, and the tense feature ([tense]) to T, as illustrated in (9).

(9) Distribution of Tense- and Φ-Features in OE and EME



The verbal root without tense and agreement must pick up these features in the course of derivation to form an X^0-level complex with full-fledged inflectional morphemes. Let us assume, then, that (i) in main clauses, the verbal root raises all the way to Top via head movement at the syntactic component and is realized at the landing site; and (ii) in subordinate clauses, the verbal root head-raises only to Fin and subsequently undergoes morphological merger at the phonological component, which is a downward affixation applied under structural adjacency (cf. Halle and Marantz (1993)); hence, the verbal complex is realized at Fin.

3.3 Morphological Realization of Verbal Inflection

The next question is how the distribution of ϕ-features in (9) was acquired by speakers of OE/EME. I contend that this is attributable to the properties of the verbal inflectional morphology during this period. The inflectional paradigm of EME is given below. In what follows, I will develop my argument on the basis of the inflectional paradigm of EME, but the same reasoning applies to OE as well.

(10) Verbal Inflectional Paradigm in EME

	Present Tense		Past Tense	
	Singular	Plural	Singular	Plural
1	*-e*	*-en*	*-d-e*	*-d-en*
2	*-st*	*-en*	*-d-st*	*-d-en*
3	*-th*	*-en*	*-d-e*	*-d-en*

The points to be noted are: (i) the past tense morpheme /-d/ can cooccur with agreement morphemes in the past tense, and (ii) first/second/third persons are distinguished only in singular forms and the morpheme /-en/ is employed exclusively to express plural number agreement. With regard to the first point, I follow Bobaljik (2002) and assume that in languages where both tense and agreement morphemes can attach to a verbal stem at the same time, features expressing tense and agreement are carried by distinct functional categories. Further, the second point suggests that within the agreement paradigm, person and number are independently expressed as well. Given these points, the proposal in (9), where tense, person, and number features are all borne by distinct functional heads, can be seen to be motivated by the properties of the verbal inflectional paradigm in (10).[6] It is naturally expected that speakers of OE/EME would have been able to set the "feature inheritance parameter" by acquiring verbal inflections.

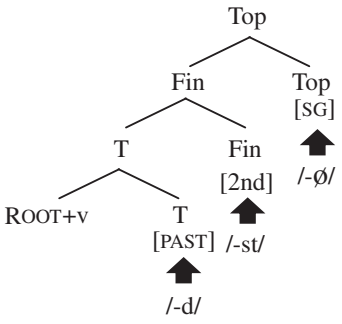
As argued in the previous section, verbal complexes are formed through syntactic head movement and/or morphological merger at the phonological component. After that, phonological expressions of each morpheme, called "Vocabulary items" in DM, are inserted into the relevant functional heads, namely, T, Fin, and Top, in accordance with the correspondence rules in (11), which specify the connection between the values of morphosyntactic features and Vocabulary items.[7]

(11) Correspondence Rules for Verbal inflection in EME

a.	T	[PRES]	⇔	/-Ø/
		[PAST]	⇔	/-d/
b.	Fin	[2nd]	⇔	/-st/
		[3rd]/[PRES]	⇔	/-th/
		elsewhere	⇔	/-e/
c.	Top	[SG]	⇔	/-Ø/
		[PL]	⇔	/-en/

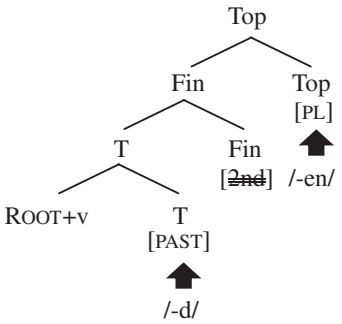
Vocabulary items for tense, person, and number are inserted into T, Fin, and Top, respectively, within an X^0-level verbal complex formed through head movement and/or morphological merger. In the case of singular agreement, since the Vocabulary item for the value [SG] is /-Ø/, only person agreement surfaces, as illustrated below:

(12) Vocabulary Insertion for Verbal Inflection: Singular Forms



Vocabulary insertion for plural agreement is represented as in (13). In contrast to singular agreement, here only the number-agreement morpheme surfaces. In order to capture this effect under the present framework, I posit the impoverishment rule in (14), which requires deletion of the person feature in contexts where it is adjacent to the number feature valued as [PL].

(13) Vocabulary Insertion for Verbal Inflection: Plural Forms



(14) Impoverishment Rule: [person] → Ø/[PL]

Behind the correspondence rule in (11) and the impoverishment rule in (14) lies the insight that the agreement morphemes that appear in the singular slots of the inflectional paradigm in (10) express only person agreement, and also that the morpheme /-en/ invalidates these person morphemes in the plural forms. Thus, the asymmetry between singular and plural forms with respect to the presence or absence of person distinction can properly be described in terms of how Vocabulary insertion is executed.

4. Licensing and Demise of Null Subjects

4.1 The Licensing Conditions on *Pro*

Since the advent of the Principles-and-Parameters approach in the early 1980s, a wide range of data and knowledge has been accumulated in the literature concerning the licensing mechanism of *pro*. It is beyond the scope of this paper to evaluate particular proposals (see Roberts and Holmberg (2010) for a concise summary of previous studies), but it is generally agreed that in languages that exhibit rich verbal inflection, such as Italian and Spanish, the referent of *pro* is identified through verbal inflectional affixes (cf. Rizzi (1982, 1986)). With respect to the so-called "radical *pro*-drop" observed in languages without person/number agreement, such as Japanese and Chinese, Huang (1984, 1989) argues that these languages recover the referential content of *pro* via variable binding by discourse topic. Another issue to be considered is whether or not *pro* should be postulated as an independent lexical item registered in the lexicon. Under the framework of DM, it is possible to argue, and is actually claimed by some authors (e.g., Neeleman and Szendrői (2007)), that *pro* manifests itself when an ordinary pronoun fails to be overtly realized for whatever reason.

Incorporating the insights of previous studies into the present theoretical framework, I propose the following interface conditions imposed on the licensing of *pro*:

(15) a. *Sensorimotor (SM) Interface Condition*:
If a given pronoun lacks ϕ-features necessary for its morphological realization, it is spelled out as a zero form.
b. *Conceptual-Intentional (C-I) Interface Condition*:
For a given pronoun to be properly interpreted, it must be equipped with sufficient interpretable features for its referential recovery.

The SM interface condition in (15a) can be reduced to the Subset Principle in (16), which is assumed to be a general condition that regulates Vocabulary insertion.

(16) *Subset Principle*:
The phonological exponent of a Vocabulary item is inserted into a morpheme in the terminal string if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary item contains features not present in the morpheme. Where several Vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen. (Halle (1997: 128))

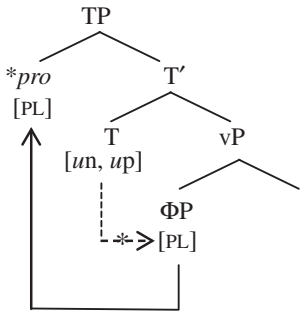
In English, the morphological shapes of pronouns are determined according to their values for gender, person, number, and case. Some correspondence rules for realizing English personal pronouns are given in (17). In what follows, I will represent the syntactic category of pronouns as ΦP for the sake of exposition, and assume that Vocabulary insertion can target this maximal projection.

(17) a. [$_{\Phi P}$ N, SG, 3rd, GEN] ⇔ /its/
b. [$_{\Phi P}$ N, SG, 3rd] ⇔ /it/
c. [$_{\Phi P}$ PL, 1st, NOM] ⇔ /we/
d. [$_{\Phi P}$ 2nd, GEN] ⇔ /your/
e. [$_{\Phi P}$ 2nd] ⇔ /you/

When a ΦP bears the bundle of features [N, SG, 3rd, GEN], the phonological exponents /its/ and /it/ match all or a subset of the features; then, /its/ is chosen because it matches the greatest number of features specified in the ΦP. If, on the other hand, a ΦP only bears the [N, SG] features, insertion does not take place, because all the correspondence rules for personal pronouns contain features other than [N, SG].

It should be noted that (15a, b) impose contradictory requirements for the occurrence of *pro*. Suppose that the feature specification of a given example of ΦP is insufficient for it to be realized as an overt pronoun. For example, when a ΦP is simply specified as [PL], its morphological shape is indeterminable at the SM interface, since there are no Vocabulary items for English personal pronouns that correspond only to the grammatical property of plurality. In such a case, the relevant ΦP is realized as a zero form, namely, *pro*, according to the condition in (15a). However, such a ΦP, with insufficient feature specification, is bound to be ruled out at the C-I interface due to the condition in (15b), which requires a ΦP to be equipped with sufficient interpretable features for its reference to be recovered. Thus, in Present-Day English (PE), the requirements in (15a, b) cannot be satisfied at the same time. The relevant structure can be illustrated as follows. Here, the solid and dotted arrows represent the relations of movement and Agree, respectively.

(18) Present-Day English

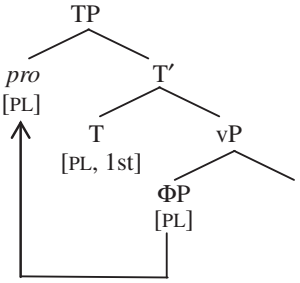


Besides the possibility of interpretative failure on the side of ΦP, the lack of ϕ-features on ΦP may also cause the derivation to crash at the C-I interface, because the uninterpretable ϕ-features on T cannot get valued via Agree with such a ΦP (see section 4.2 for relevant discussion). In any event, it naturally follows from (15a, b) that *pro* is not licensed in English-type languages.

Then, in what cases does ΦP get properly interpreted at the C-I interface even if it lacks ϕ-features necessary for its morphological realization? One such case is languages with rich agreement morphology, such as Italian and Spanish.

Following the insight of Rizzi (1982, 1986), let us assume that in these languages, verbal inflection has its own reference, that is, that ϕ-features on T that are to be realized as verbal inflection are interpretable. In this case, the referent of ΦP can be identified indirectly via the values of the ϕ-features on T.[8]

(19) Italian/Spanish

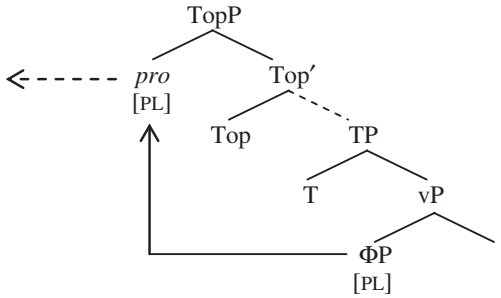


The other case is languages with flat verbal agreement, such as Japanese and Chinese. For these languages, I assume the following:

(20) a. Verbal inflection in Japanese and Chinese need not to be licensed through ϕ-feature agreement with the subject (cf. Jaeggli and Safir (1989)).
b. When ΦP is located in Spec-Top as a topic element, its referentiality can be recovered through context linking (cf. Huang (1984, 1989)).

The relevant structure can be delineated as follows. The broken arrow is intended to informally represent context linking with the previous discourse (see section 4.2).

(21) Japanese/Chinese



From (20a), it can be guaranteed that problems concerning the licensing of verbal inflection will not arise even if the ϕ-feature specification of ΦP is insufficient. Furthermore, the referentiality of ΦP can be properly recovered via context linking, as stated in (20b). This is equivalent to saying that radical *pro*-drop in Japanese and Chinese is in fact a kind of topic-drop. Thus, it is predicted from the assumptions here that radical *pro*-drop is observed only in discourse-configurational languages such as Japanese and Chinese, and is never allowed in subject-prominent languages like English. In what follows, we will see how this prediction is borne out in the historical development of English.

4.2 Person Split for the Interpretation of *Pro*

We are now in a position to provide answers to the questions listed in (2) above. To reiterate, they are concerned with (i) idiosyncratic variety in the licensing of *pro*, (ii) distributional asymmetry between main and subordinate clauses, (iii) person split for the interpretation of *pro*, and (iv) the reason for the demise of *pro* in LME. Let us consider these issues in turn, beginning with (iii).

First, it should be determined which type of interpretive strategy is employed for *pro* in EME, that is, whether its referent is identified through verbal inflection (as in Italian) or via context linking (as in Japanese). The former possibility can be safely dismissed, since, as is clear from the the inflectional paradigm in (10) in section 3.3, in EME, overt forms of pronominal subjects cannot be recovered from verbal inflection alone. On the other hand, there is some independent evidence to support the latter possibility. First, EME *pro* generally requires an overt antecedent either within the same sentence, as in (22a), or somewhere within the discourse, as in (22b).[9]

(22) a. *Þe eadie Ieremie he*$_i$ *sei*ð (*pro*$_i$) *set him ane*.
the blessed Jeremiah he says set him by oneself (CMANCRIW-1, II.122.1564)

b. *& hu schule þeos rich ancres*$_{i}$ *þe tilieð oðer habbeð rentes isette. don to*
and how shall these rich nuns that engage in plowing or have rents set give to
poure necheburs dearneliche hire almes. (*pro*$_{i}$) *Ne wilni naut to habbe word of an large*
poor neighbors dearly their elms not will not to have word of a generous
ancre.
nun (CMANCRIW-2, II.304.977–978)

The antecedents are salient enough in these contexts to serve as "discourse topics." Thus, it seems plausible to suppose that the referent of *pro* is supplied not by verbal inflection but by discourse topics.

A second piece of evidence comes from the fact that in addition to referential null subjects, referential null objects are also found in EME (see Walkden (2011) for examples in OE).

(23) *Efterward he him halȝeþ of al to godes seruice. uor he deþ him al away of alle wreþe. and*
afterward he him hallows of all to God's service for he makes him all away of all wrath and
deþ him$_{i}$ *al þenche of god*. [...] *Efterward* (*pro*$_{i}$) *he depþ ine blod*.
makes him all think of God. Afterward he dips in blood
(*Ayenbite of Inwit*/Gradon (1866: 106–107))

Here, the last sentence is read as 'Afterward, he dips *him* in the blood'. We can interpret this as an instance of the object pronoun being dropped qua topic element, owing to the presence of its antecedent within the nearby context. Given these properties of *pro*, "subject-drop" in EME should more appropriately be regarded as "topic-drop," much like that in Japanese and Chinese, where ΦP is identified through context linking.

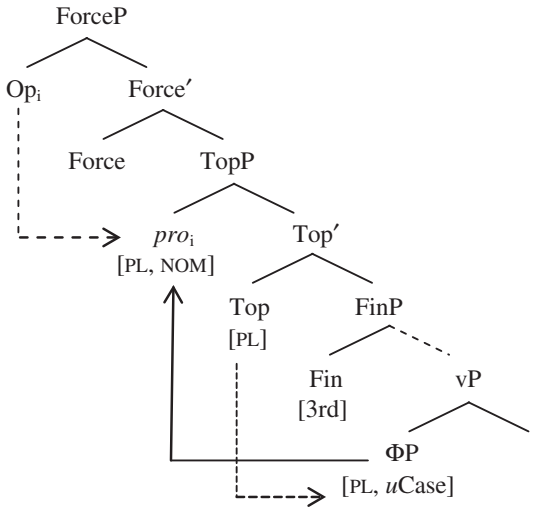
Thus, let us use the name "Dialect A" for the grammar of EME speakers who tolerated *pro*, and assume that it has the correspondence rules for realizing personal pronouns seen in (24). Here, only nominative pronouns are given since genitive and accusative forms are not relevant for the present discussion.

(24) Correspondence Rules for Personal Pronouns in EME: Dialect A

	Singular			Plural		
1	[ΦP SG, 1st, NOM]	⇔	/ic/	[ΦP PL, 1st, NOM]	⇔	/we/
2	[ΦP SG, 2nd, NOM]	⇔	/þu/	[ΦP PL, 2nd, NOM]	⇔	/ge/
3	[ΦP M, SG, 3rd, NOM]	⇔	/he/	[ΦP PL, 3rd, NOM]	⇔	/hie/
	[ΦP F, SG, 3rd, NOM]	⇔	/heo/			
	[ΦP N, SG, 3rd, NOM]	⇔	/hit/			

ΦP is not overtly realized when its feature specification is less informative than the ones listed in these correspondence rules. For example, the relevant part of the structure where ΦP is equipped with only number and Case features is represented as in (25).

(25) Early Middle English: Dialect A



As argued in section 3.1, pronominal subjects in EME are located in Spec-Top (see (3)). In order to implement the idea of context linking within the present framework, I assume for concreteness that the referentiality of a ΦP with defective feature specification is recovered by its being bound by a topic operator in Spec-Force. A potential problem with this

derivation is that unlike Japanese and Chinese, EME exhibits overt verbal inflection; more specifically, Top and Fin bear uninterpretable number and person features that must be valued in some way or other (see (9) in section 3.2). Of these, the [*u*number] feature on Top can be valued via Agree with ΦP; but what about the [*u*person] feature on Fin, which cannot find its goal in the above configuration? In order to rescue derivations of this sort, let us suppose that the following procedure is at work:

(26) The [*u*person] feature is valued as [3rd] by default in the absence of an appropriate goal in its c-command domain.

This assumption seems rather plausible in that the third person is commonly recognized as the "unmarked" person marking and in that a similar default strategy is employed in other constructions in EME and other languages as well (e.g., impersonal psych-verb constructions without nominative-marked NPs). Additionally, let us assume that the interpretability of features correlates with the presence or absence of values for them, so that if an uninterpretable feature is assigned a value in the course of derivation, it turns into an interpretable feature and is properly interpreted at the C-I interface. Given this much, we can account for the person split for the interpretation of *pro*: it should be interpreted as referring to a third-person entity, because if it gets identified with a first- or second-person participant in the discourse through variable binding, its interpretation conflicts with the value of [3rd] on Fin, so that the derivation as a whole crashes at the C-I interface.

4.3 Idiosyncratic Variation

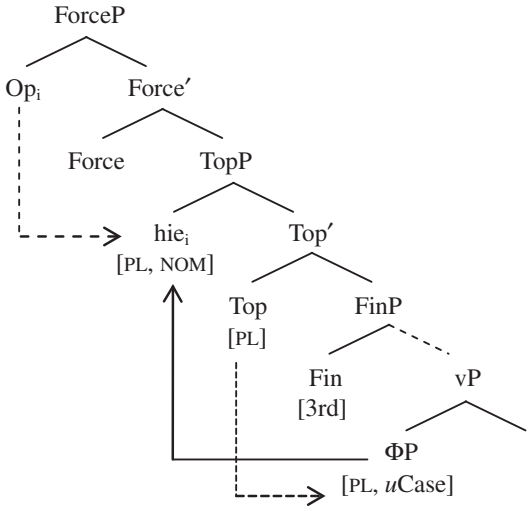
Let us next turn to idiosyncratic variation in the licensing of *pro*. Why did some speakers of EME tolerate *pro* while others did not? I contend that the key to solving this problem lies in the correspondence rules for personal pronouns in EME. Recall that in the correspondence rules given in (24), (gender), number, person, and Case features are fully specified for a given Vocabulary item. Alternatively, if we define the third person negatively as "the person that does not involve either the speaker or the hearer" (cf. Anderson (1982), Kayne (2000), Rezac (2003), Sigurðsson (1996)), the feature [3rd] does not necessarily need to be specified in the relevant correspondence rules. Let us refer to the grammar of EME speakers who did not allow *pro* as "Dialect B" and assume the correspondence rules for realizing personal pronouns given in (27).

(27) Correspondence Rules for Personal Pronouns in EME: Dialect B

	Singular			Plural		
1	[ΦP SG, 1st, NOM]	⇔	/ic/	[ΦP PL, 1st, NOM]	⇔	/we/
2	[ΦP SG, 2nd, NOM]	⇔	/þu/	[ΦP PL, 2nd, NOM]	⇔	/ge/
3	[ΦP M, SG, NOM]	⇔	/he/	[ΦP PL, NOM]	⇔	/hie/
	[ΦP F, SG, NOM]	⇔	/heo/			
	[ΦP N, SG, NOM]	⇔	/hit/			

When a ΦP with only number and Case features appears as the subject, the structure looks like (28). Compare this with the structure in (25).

(28) Early Middle English: Dialect B



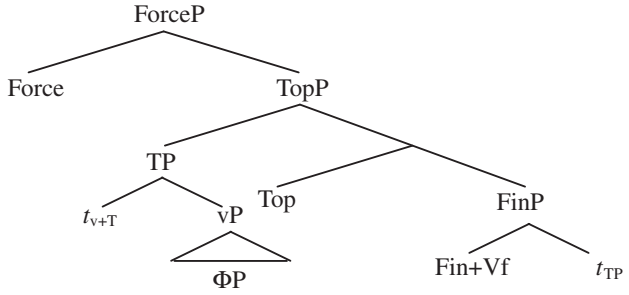
Feature specification of ΦP and the process of valuation of uninterpretable features on Top and Fin are exactly the same as in (25) above. The only difference is that ΦP is morphologically realized at Spec-Top in (28). According to the

correspondence rules in (27), the [PL, NOM] features borne by the ΦP are sufficient for realizing the Vocabulary item /hie/, so that it manifests itself as an overt personal pronoun (see the shaded portion of the rules). In other words, speakers of Dialect B, who did not tolerate *pro*, were those who could overtly realize ΦPs with defective ϕ-feature specification. Thus, the idiosyncratic variation concerning the licensing of *pro* can be reduced to the presence or absence of the person feature [3rd] in the correspondence rules for personal pronouns.

4.4 Asymmetry Between Matrix and Subordinate Clauses

Up to this point, we have limited our discussion to the licensing of *pro* in main clauses and embedded clauses with verb-medial order, where ΦP appears as the Spec element of Top. As argued in section 2, *pro* was in principle not allowed in embedded clauses with verb-final order in EME. How is this distributional gap accounted for? The key point is that the verb-final order is derived via verb movement to Fin followed by remnant movement of TP to Spec-Top.

(29) Verb-Final Order in Subordinate Clauses



For a ΦP to be identified through context linking, it must be located in Spec-TopP as a topic element (see (20b) above). In (29), however, ΦP is not licensed as a topic per se, but instead is included within a Spec element of TopP. Since it cannot recover its referentiality via context linking, it will be filtered out at the C-I interface if it is not equipped with sufficient interpretable ϕ-features. Thus, ΦP is obligatorily realized as an overt pronoun in embedded clauses.

4.5 The Demise of *Pro*

Let us move on to the final issue: the reason for the loss of *pro* in LME. It is noteworthy that two major morphosyntactic changes took place in the mid-14th century; first, the decline of plural agreement marker /-en/ and second, the demise of V2 order. Nawata (2009) argues that these two changes are closely related, in the sense that the former triggered the latter. The scenario goes as follows. First, with the decline of plural inflection /-en/ to /-e/, the verbal inflectional paradigm changed from (10)—repeated here as (30)—into (31), given below, in LME.

(30) Verbal Inflectional Paradigm in EME

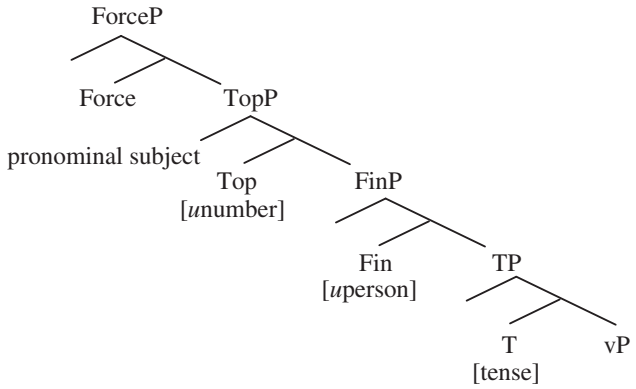
	Present Tense		Past Tense	
	Singular	Plural	Singular	Plural
1	*-e*	*-en*	*-d-e*	*-d-en*
2	*-st*	*-en*	*-d-st*	*-d-en*
3	*-th*	*-en*	*-d-e*	*-d-en*

(31) Verbal Inflectional Paradigm in LME

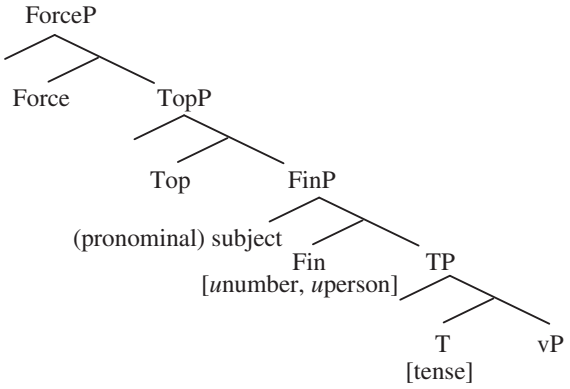
	Present Tense		Past Tense	
	Singular	Plural	Singular	Plural
1	*-e*	*-e*	*-d-e*	*-d-e*
2	*-st*	*-e*	*-d-st*	*-d-e*
3	*-th*	*-e*	*-d-e*	*-d-e*

In (31), the agreement morpheme /-e/ appears in the first-person singular slots in both present and past tenses and in the third-person singular slot in the past tense, as well as in the plural number slots in both tenses. Thus, unlike EME, /-e/ no longer serves as a morpheme employed exclusively for plural number agreement. It seems natural, then, to suppose that as a result of the acquisition by LME speakers of the inflectional paradigm in (31), the feature inheritance parameter was reset in such a way that the scattered distribution of ϕ-features illustrated in (9), repeated here as (32), changed into the one shown in (33), where the [*u*number] and [*u*person] features are collectively carried by Fin.[10]

(32) Distribution of Tense- and Φ-Features in EME



(33) Distribution of Tense- and Φ-Features in LME



Along with the shift of uninterpretable ϕ-features, the correspondence rules for Vocabulary insertion of verbal inflection in (11), repeated here as (34), also changed to those in (35).

(34) Correspondence Rules for Verbal inflection in EME

a.	T	[PRES]	⇔	/-Ø/
		[PAST]	⇔	/-d/
b.	Fin	[2nd]	⇔	/-st/
		[3rd]/[PRES]	⇔	/-th/
		elsewhere	⇔	/-e/
c.	Top	[SG]	⇔	/-Ø/
		[PL]	⇔	/-en/

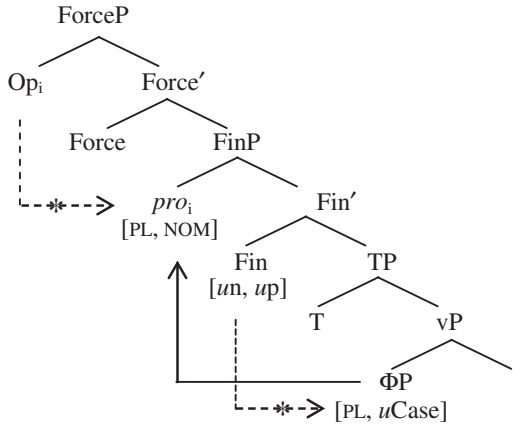
(35) Correspondence Rules for Verbal inflection in LME

a.	T	[PRES]	⇔	/-Ø/
		[PAST]	⇔	/-d/
b.	Fin	[2nd, SG]	⇔	/-st/
		[3rd, SG]/[PRES]	⇔	/-th/
		elsewhere	⇔	/-e/

In OE and EME, Top was obligatorily activated in the phrase structure, because it was responsible for realizing the number-agreement morpheme. This rendered OE and EME discourse-configurational V2 languages, where the sentence-initial position was occupied by a topic element. However, as a consequence of the shift of the [*u*number] feature from Top to Fin, activation of Top became optional and Spec-Fin came to serve as the canonical subject position for both pronominal and nominal subjects.[11] This is how Nawata (2009) claims that the decline of verbal inflection caused the loss of V2 in LME.

If this argument is on the right track, the demise of *pro* in LME also follows from the changes to the feature-inheritance parameter. When a ΦP with only number and Case features occurs as the subject in LME, the relevant structure can be represented as follows:

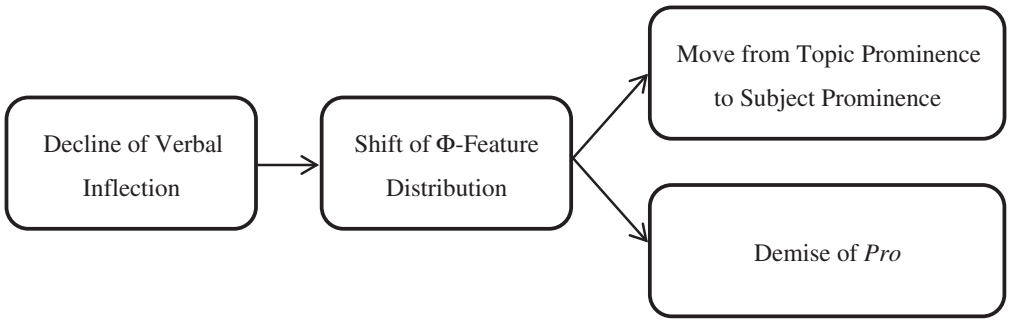
(36) Late Middle English



This structure is faced with the same difficulty as the one for PE (see (18) in section 4.1): the ΦP cannot be properly interpreted due to the lack of ϕ-features necessary for its identification (note that context linking is not available here), and possibly, the uninterpretable ϕ-features on Fin remain unvalued as well.[12] Thus, ΦPs with defective feature specification ceased to be licensed at the C-I interface because of the shift in ϕ-feature distribution and the subject position, which can ultimately be reduced to the decline of number-agreement morphology in LME.

From the discussion above, the causal chain of changes from EME to LME can be summarized as follows.

(37) Transition from EME to LME



The syntactic changes on the right side can be understood as effects of morphological change on the left side mediated by the shift in ϕ-feature distribution. Since the decline of verbal inflection is a bona fide instance of language change in the realm of "externalization," we have succeeded in explaining the diachronic changes in question in conformity with the spirit of SMT.

5. Conclusion

The corpus search conducted for this study revealed that referential *pro* was grammatically allowed in EME but ceased to be licensed in LME. I have maintained that *pro* in EME (as well as in OE) was in fact a null topic, and have attempted to relate its demise to the concurrent typological shift of English from a discourse-configurational language to a subject-prominent language. I have made this argument with recourse to the fine structure of the left periphery, the theory of feature inheritance, and the derivational architecture of DM. To put it informally, the typological change in question can be described as an effect of the downward shift in the position of subject pronouns and the uninterpretable ϕ-features, which are ultimately attributable to the decline of verbal inflection. Thus, as far as the analysis advanced in this paper is successful, the changes under discussion present an intriguing case of syntax–morphology interface in the domain of language change, where micro-level morphological attrition finally results in a large-scale typological shift of a language.

Appendix: "(De)grammaticalization" of Personal Pronouns in English?

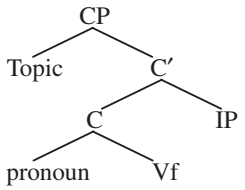
For Italian/Spanish-type null-subject languages with rich verbal inflection, it is often argued that *pro* developed as a result of the change illustrated below, where a former DP subject is historically reanalyzed as the head of the category representing verbal agreement (cf. Roberts and Roussou (2003)).

(A-1) $[_{AgrSP}\ DP_i\ [_{AgrS}\ V]\ [_{TP}\ [_{VP}\ t_i \ldots \rightarrow [_{AgrSP}\ \textit{pro}\ [_{AgrS}\ D{+}V] \ldots$

This kind of change from an XP Spec to an X^0 head is a case of "grammaticalization" (and changes in the opposite direction, of "degrammaticalization"). The question arises here whether the development of *pro* in the history of English has anything to do with this kind of grammaticalization process.

The "verb-third" order in main clauses with pronominal subjects (topic—pronominal subject—finite verb) observed in OE and EME has been a recalcitrant problem in the literature. For example, Kemenade (1987), who assumes a simple CP–IP phrase structure, proposes that pronouns in early English head-adjoin to the left of the functional category C as clitics.

(A-2) Clitic Analysis of Personal Pronouns



(Kemenade (1987))

Under this line of analysis, it might be argued that *pro* in OE/EME was an unpronounced form of these X^0-level clitics. Note that this approach implies that personal pronouns were "degrammaticalized" in LME when they were reanalyzed as XP elements that occupied a Spec position of some functional category (e.g., in the phrase structure assumed in Kemenade (1987), Spec-Infl). However, this development will go against the well-known hypothesis concerning the "cline of grammaticalization," which states that lexical items unidirectionally change from content items through grammatical words or clitics to inflectional affixes (and finally to zero forms), but not vice versa (cf. Hopper and Traougott (2003)). There are indeed some exceptional cases of degramaticalization reported; for example, in German and French, second-person-singular familiar forms *du* and *tu* are degrammaticalized into lexical verbs *duzen* and *tutoyer*, respectively, both meaning 'to use the familiar address form' (ibid.: 134). Such a process, however, is attested only for a limited range of lexical items (such as *du* and *tu*), not for an entire grammatical category (i.e., not for all the pronouns in a given language). Given these considerations, the clitic analysis of personal pronouns in OE/EME by Kemenade (1987) seems to be off the mark.

In light of the unidirectional hypothesis, it might alternatively be argued that *pro* in OE/EME emerged as a consequence of the grammaticalization of pronouns into inflectional affixes. Fuß (2005) claims that verbal agreement for second-person forms and first-person plural in Bavarian German developed out of C-oriented clitics, as illustrated in the following schema.

(A-3) $[_{CP}\ XP\ [_{C'}\ C{+}V{+}\text{pronoun}_i\ [_{TP}\ t'_i\ [_{T'}\ T\ [_{vP}\ t_i \ldots \rightarrow [_{CP}\ XP\ [_{C'}\ C{+}V{+}Agr\ [_{TP}\ T\ [_{vP}\ \textit{pro} \ldots$

Under this scenario, *pro* is regarded as a byproduct of the reanalysis of clitic pronouns into agreement markers. However, this line of analysis cannot be applied to *pro* in OE/EME, for the following reasons. First, to the best of my knowledge, there has been no evidence offered in the literature that the third-person agreement affixes in OE/EME actually originated from personal pronouns. Second, since pronouns in OE/EME cliticized to the left of finite verbs, as shown in (A-2), the result of grammaticalization would have been inflectional *pre*fixes rather than *suf*fixes, contrary to the case in fact. Third, from the typological point of view, it is generally acknowledged that the grammaticalization of first- and second-person agreement markers takes place before the grammaticalization of third-person forms (see Fuß (2005: 9)). In the case of Bavarian German, only first- and second-person pronouns underwent the process seen in (A-3). This is quite opposite to the situation of OE/EME, where the interpretation of *pro* is essentially limited to the third person.

We can conclude, then, that it is not the case that (i) personal pronouns in OE/EME were degrammaticalized in LME, nor that (ii) *pro* in OE/EME emerged as a byproduct of grammaticalization of clitic pronouns into agreement markers. The analysis advanced in the text is consistent with these conclusions. I have argued that the categorial status of pronouns, represented as ΦP, has been stable throughout the history of English, and that whether or not it can be realized as a null form (i.e., *pro*) is independently controlled by SM and C-I interface conditions, correspondence rules for realizing ΦP, and the distribution of ϕ-features among functional categories. The only change that ΦP experienced is the shift of its surface position (from Spec-Top to Spec-Fin), and this change has no bearing on its semantic content or its categorial status. Thus, arguments around the (de)grammaticalization of personal pronouns are simply irrelevant to the issues discussed in this paper.

Acknowledgments

This is a revised and extended version of Nawata (2012) and a paper presented at the 85th Annual General Meeting

of the English Literary Society of Japan, held at Tohoku University on May 25, 2013. I am grateful to Michio Hosaka, Akiko Kobayashi, Akiko Nagano, Fumikazu Niinuma, Yoshiki Ogawa, Masako Ohara, and two annonymous reviewers for their helpful comments and suggestions on those earlier versions of this paper. This work was partly supported by JSPS Grant-in-Aid for Young Scientists (B), Grant No. 23720251. All remaining errors are, of course, my own.

Notes

[1] The use of the term *pro* is only for the sake of convenience; I do not intend to imply that *pro* is an independent lexical item listed in the lexicon. I will explicate how null subjects are licensed in section 4.1, arguing that they are in fact phonetically null realization of ordinary pronouns.

[2] To anticipate the discussion in section 3.1, I propose that verb-final order in embedded clauses is derived through overt verb movement followed by XP remnant movement across the finite verb. The classification of word orders is based on this assumption. Thus, surface verb-final strings that are also derivable without remnant movement are not classified into the category "verb-final" in Table 3.

[3] The final lines in examples taken from PPCME2 give an abbreviated filename for the source text followed by the sentence ID from the corpus file.

[4] Note, however, that verb-medial order already exists in OE, as in (i):

(i) *He is swa mihtig wyrhta þæt he* ***mæg awendan*** *yfel to gode þurh his godnysse*
he is so mighty worker that he may turn evil to good through his goodness
'He is so mighty a worker that he can turn evil to good through his goodness' (ÆLS [Forty Soldiers] 315)

I am grateful to an annonymous reviewer for providing me this example.

[5] As pointed out by Yoshiki Ogawa (personal communication), this consequence follows only if we suppose that the inheritace of ϕ-features is obligatory, which is not a trivial assumption given such phenomena as complementizer agreement in some languages. Richards (2007) argues that the conceptual necessity of feature inheritance naturally follows from the premises that valuation of uninterpretable features and transfer of a phrase-structure chunk must take place simultaneously and that the edge and complement of a phase are transferred separately. However, Richards's argument is based on the assumption that once uninterpretable features are valued, they must be deleted before they reach the C-I interface, which is not consistent with the discussion in section 4.2. I will leave the issue of how to derive the conceptual necessity of feature inheritance for future research.

[6] Dutch exhibits a similar inflectional pattern as EME, as illustrated in (i):

(i) Verbal Inflectional Paradigm in Dutch

	Present Tense		Past Tense	
	Singular	Plural	Singular	Plural
1	*-Ø*	*-en*	*-d-e*	*-d-en*
2	*-t*	*-en*	*-d-e*	*-d-en*
3	*-t*	*-en*	*-d-e*	*-d-en*

This contrasts with rich verbal inflections of Romance languages, exemplified by French in (ii):

(ii) Verbal Inflectional Paradigm in French

	Present Tense		Past Tense	
	Singular	Plural	Singular	Plural
1	*-e*	*-ons*	*-ais*	*-i-ons*
2	*-es*	*-ez*	*-ais*	*-i-ez*
3	*-e*	*-ent*	*-ait*	*-aient*

This paradigm does not exhibit singular-plural asymmetry with respect to person distinction, unlike EME and Dutch. In (ii), number and person inflections are *collectively* realized by single morphemes, so that it seems reasonable to assume that relevant agreement features are borne by a single functional head (see (19) below). The proposal in the text that number and person features are located on distinct heads in EME is intended to structurally capture the typological difference between Germanic V2 languages on the one hand and Romance languages on the other concerning verbal inflectional pattern. It is also possible to assume that number and person features are collectively carried by a single head in EME in much the same way as in Romance languages (as pointed out by an anonymous reviewer and Yoshiki

Ogawa (personal communication)), and this might indeed be the case, but then, the singular-plural asymmetry with respect to person distinction in EME and Dutch would simply be an accidental phenomenon.

[7] Abbreviations used hereafter are as follows. 1st/2nd/3rd = first/second/third person, ACC = accusative, F = feminine, GEN = genitive, M = masculine, N = neuter, NOM = nominative, PAST = past tense, PL = plural, PRES = present tense, SG = singular, *u*n = uninterpretable number feature, *u*p = uninterpretable person feature.

[8] To be more precise, an additional interface condition is required, to the effect that the feature specification of the ΦP and that of the verbal inflection must not be inconsistent. For example, if the value of the number feature of ΦP is [SG] in (19), the derivation crashes at the C-I interface because the value is inconsistent with the [PL, 1st] features on T.

[9] The clause-initial element *þe eadie Ieremie* 'the blessed Jeremiah' can be interpreted either as a left-dislocated element or a parenthetical clause. In the former case, the whole sentence is read as 'the blessed Jeremiah says that he sits alone,' whereas in the latter, the translation is 'It is said that the pious Jeremiah sits in solitude.' I am grateful to an annonymous reviewer for bringing my attention to this point.

[10] Since the distributional change of ϕ-features directly manipulates syntactic representations, as in (32) and (33), one might wonder whether this is an instance of "variation at externalization" conforming to SMT (see section 1). The fuller investigation of this conceptual problem lies outside the scope of this paper, but it is at least safe to say that this parameter is a natural consequence of feature inheritance coupled with the fine structure of the CP domain, as argued in section 3.2. Thus, the feature inheritance parameter conforms to SMT to the extent that these proposals conform to SMT. Note also that the mechanism of feature inheritance, where all ϕ-features originate in C and are passed down to non-phrase heads, denies any inherent connection between ϕ-features and the functional heads that finally host these features. In (32) and (33), Top and Fin can bear the [*u*number] and/or [*u*person] features simply because nothing prevents it. In this sense, uninterpretable ϕ-features are genuine "dependent features" that do not head their own projections.

[11] The trigger of subject raising is different between EME and LME. In EME, the [*u*number] feature on Top agrees with the subject, but it does not trigger the movement to Spec-Top by itself. Some topic, which may be a subject or another, raises to Spec-Top to satisfy the "Topic-Criterion," the requirement that some element must be in a Spec-head relation with Top (cf. Rizzi (1997)). In LME, on the other hand, the subject raising to Spec-Fin occurs concomitantly with ϕ-feature agreement as a kind of "EPP" movement. Given the dissociation of topic movement from subject agreement in EME, one may wonder why the shift of the [*u*number] feature from Top to Fin in LME caused the downward shift of the pronominal subject position at the same time. This question requires further investigation, but it may well have been the case that since pronominal subjects were the most unmarked topic, the linear order of pronominal subjects followed by tensed verbs underwent a downward reanalysis as a unit when languages learners reset the feature inheritance parameter. See Nawata (forthcoming) for a relevant discussion.

[12] I argued in section 4.2 that the [*u*person] feature can be valued as [3rd] by default in the absence of an appropriate goal. The same approach might be applied to (36) as well; alternatively, it might be the case that the default valuation can be applied only when the [*u*person] feature is independently borne by some functional head, not as part of a bundle of ϕ-features, as illustrated in the structure of EME in (25). I will put the evaluation of these two possibilities aside, since the argument in the text does not hinge on the choice between them.

REFERENCES

[1] Anderson, Stephen R. (1982) "Where's Morphology?," *Linguistic Inquiry* 13, 571–612.

[2] Berwick, Robert C. and Noam Chomsky (2011) "The Biolinguistic Program: The Current State of Its Development," *The Biolinguistic Enterprise: New Perspectives on the Evolution and Nature of the Human Language Faculty*, ed. by Anna Maria Di Sciullo and Cedric Boeckx, 19–41, Oxford University Press, New York.

[3] Bobaljik, Jonathan David (2002) "Realizing Germanic Inflection: Why Morphology Does Not Drive Syntax," *The Journal of Comparative Germanic Linguistics* 6, 129–167.

[4] Chomsky, Noam (2004) "Beyond Explanatory Adequacy," *Structures and Beyond: The Cartography of Syntactic Structures, Volume 3*, ed. by Adriana Belletti, 104–131, Oxford University Press, New York.

[5] Chomsky, Noam (2008) "On Phases," *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*, ed. by Robert Freidin, Carlos P. Otero, and Maria Luisa Zubizarreta, 133–166, MIT Press, Cambridge, MA.

[6] Embick, David and Rolf Noyer (2007) "Distributed Morphology and the Syntax–Morphology Interface," *The Oxford Handbook of Linguistic Interfaces*, ed. by Gillian Ramchand and Charles Reiss, 289–324, Oxford University Press, New York.

[7] Fischer, Olga, Ans van Kemenade, Willem Koopman, and Wim van der Wurff (2000) *The Syntax of Early English*, Cambridge University Press, Cambridge.

[8] Fuß, Eric (2005) *The Rise of Agreement: A Formal Approach to the Syntax and Grammaticalization of Verbal Inflection*, John Benjamins, Amsterdam.

[9] Gelderen, Elly van (2000) *A History of English Reflexive Pronouns: Person*, Self, *and Interpretability*, John Benjamins, Amsterdam.

[10] Gradon, Pamela, ed. (1866) *Dan Michel's Ayenbite of Inwyt or Remorse of Conscience*, Early English Text Society, Oxford.

[11] Hahn, Thomas (1999) "Early Middle English," *The Cambridge History of Medieval English Literature*, ed. by David Wallace, 61–91, Cambridge University Press, Cambridge.

[12] Halle, Morris (1997) "Distributed Morphology: Impoverishment and Fission," *PF: Papers at the Interface* (*MIT Working*

Papers in Linguistics 30), ed. by Benjamin Bruening, Yoonjung Kang, and Martha McGinnis, 125–149, MITWPL, Cambridge, MA.
[13] Halle, Morris and Alec Marantz (1993) "Distributed Morphology and the Pieces of Inflection," *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, ed. by Kenneth Hale and Samuel Jay Keyser, 111–176, MIT Press, Cambridge, MA.
[14] Hopper, Paul J. and Elizabeth Closs Traugott (2003) *Grammaticalization*, Second edition, Cambridge University Press, Cambridge.
[15] Huang, C.-T. James (1984) "On the Distribution and Reference of Empty Pronouns," *Linguistic Inquiry* 15, 531–574.
[16] Huang, C.-T. James (1989) "Pro-Drop in Chinese: A Generalized Control Theory," *The Null Subject Parameter*, ed. by Osvaldo Jaeggli and Kenneth J. Safir, 185–214, Kluwer, Dordrecht.
[17] Hulk, Aafke and Ans van Kemenade (1993) "Subjects, Nominative Case, Agreement and Functional Heads," *Lingua* 89, 181–215.
[18] Hulk, Aafke and Ans van Kemenade (1995) "Verb Second, Pro-Drop, Functional Projections and Language Change," *Clause Structure and Language Change*, ed. by Adrian Battye and Ian Roberts, 227–256, Oxford University Press, New York.
[19] Jaeggli, Osvaldo and Kenneth J. Safir (1989) "The Null Subject Parameter and Parametric Theory," *The Null Subject Parameter*, ed. by Osvaldo Jaeggli and Kenneth J. Safir, 1–44, Kluwer, Dordrecht.
[20] Kayne, Richard S. (2000) *Parameters and Universals*, Oxford University Press, New York.
[21] Kemenade, Ans van (1987) *Syntactic Case and Morphological Case in the History of English*, Foris, Dordrecht.
[22] Kroch, Anthony and Ann Taylor (2000) *Penn-Helsinki Parsed Corpus of Middle English*, Second edition, Department of Linguistics, University of Pennsylvania, Philadelphia.
[23] Nawata, Hiroyuki (2009) "Clausal Architecture and Inflectional Paradigm: The Case of V2 in the History of English," *English Linguistics* 26, 247–283.
[24] Nawata, Hiroyuki (2012) "Koeigo, Chueigo ni okeru "Kushugo" no Ninka to Shoshitsu: Wadai Takuritsu Gengo kara Shugo Takuritsu Gengo e (On the Licensing and the Demise of "Null Subjects" in Old and Middle English: From a Topic Prominent Language to a Subject Prominent Language)," *Memoirs of the Faculty of Education, Shimane University* 46, 101–110.
[25] Nawata, Hiroyuki (forthcoming) "Temporal Adverbs and the Downward Shift of Subjects in Middle English: A Pilot Study," *Studies in Modern English: The Thirtieth Anniversary Publication of the Modern English Association*, ed. by the Editorial Board of *Studies in Modern English*, Eihosha, Tokyo.
[26] Neeleman, Ad and Kriszta Szendrői (2007) "Radical Pro Drop and the Morphology of Pronouns," *Linguistic Inquiry* 38, 671–714.
[27] Pintzuk, Susan and Leendert Plug (2001) *York-Helsinki Parsed Corpus of Old English Poetry*, Department of Language and Linguistic Science, University of York, York.
[28] Rezac, Milan (2003) "The Fine Structure of Cyclic Agree," *Syntax* 6, 156–182.
[29] Richards, Marc D. (2007) "On Feature Inheritance: An Argument from the Phase Impenetrability Condition," *Linguistic Inquiry* 38, 563–572.
[30] Rizzi, Luigi (1982) *Issues in Italian Syntax*, Foris, Dordrecht.
[31] Rizzi, Luigi (1986) "Null Objects in Italian and the Theory of *pro*," *Linguistic Inquiry* 17, 501–557.
[32] Rizzi, Luigi (1997) "The Fine Structure of the Left Periphery," *Elements of Grammar: Handbook of Generative Syntax*, ed. by Liliane Haegeman, 281–337, Kluwer, Dordrecht.
[33] Roberts, Ian and Anders Holmberg (2010) "Introduction: Parameters in Minimalist Theory," *Parametric Variation: Null Subjects in Minimalist Theory*, ed. by Theresa Biberauer, Anders Holmberg, Ian Roberts, and Michelle Sheehan, 1–57, Cambridge University Press, Cambridge.
[34] Roberts, Ian and Anna Roussou (2003) *Syntactic Change: A Minimalist Approach to Grammaticalization*, Cambridge University Press, Cambridge.
[35] Sigurðsson, Halldór Ármann (1996) "Icelandic Finite Verb Agreement," *Working Papers in Scandinavian Syntax* 57, 1–46.
[36] Taylor, Ann, Anthony Warner, Susan Pintzuk, and Frank Beths (2003) *York-Toronto-Helsinki Parsed Corpus of Old English Prose*, Department of Language and Linguistic Science, University of York, York.
[37] Tolkien, John Ronald Reuel (1929) "Ancrene Wisse and Hali Meiðhad," *Essays and Studies by Members of the English Association* 14, 104–126.
[38] Walkden, George (2011) "Null Arguments in Old English," paper presented at the 2011 Annual Meeting of the Linguistics Association of Great Britain.