

Grammaticalization of the marginal modal verb *ought to*: A corpus-based approach*

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Yae, Sunhee. 2015. Grammaticalization of the marginal modal verb *ought to*: A corpus-based approach. *Linguistics Research* 32(3), 773-793. The aim of this paper is to address grammatical functions and semantic extensions of the marginal modal verb *ought to*. *Ought* is derived from the lexical verb *agan* 'to possess' in OE (Old English) and grammaticalized into the marginal modal verb. The form *agan to* + nonfinite complement in OE designated 'to owe' and became the direct source from which the deontic meaning of *ought to* stemmed from the origin by the mechanisms of reanalysis and pragmatic inference. Although *ought to* has developed into its functions from deonticity to epistemicity, this paper will argue that hypothesis, advisability, suitability, and politeness are also a wide range of functions of *ought to*. It is argued that the direction from deonticity to epistemicity, and from deonticity to hypothesis, advisability, suitability, and politeness are on the developmental cline from speaker-orientation to speech-act orientation, and from subjectification to intersubjectification. This paper attempts to investigate synchronic and diachronic changes of *ought to* in normalized frequency per million words with the help of the authentic corpus data. The diachronic data of PNP-collocates and the synchronic data of adverb-collocates are employed to show collocational strengths with *ought to*. The usage-based corpus research corroborates our arguments on diachronic trajectories of the marginal modal verb *ought to*, ranging from speaker-orientation to speech-act orientation, and from subjectification to intersubjectification. (Chung-Ang University)

Keywords *ought to*, subjectification, intersubjectification, speech-act orientation, frequency, collocational strength

* I would like to thank two anonymous reviewers for their insightful comments and suggestions. Any remaining errors are entirely mine.

1. Introduction

Quirk et al. (1985: 137) categorize *ought to* into marginal modal verbs together with *dare to*, *need to* and *used to* while *can*, *could*, *may*, *might*, *must*, *will*, *would*, *shall*, and *should* are included in central modal verbs. Syntactically *ought to* does not have all the properties pertained to the central modals. First, *ought* takes both bare and *to* infinitives. Second, in questions, *ought to* can be used as an operator but in some dialects it triggers *do*-support (e.g., Did she ought to go?). Third, in some dialects it disallows negative reduction. However, others allow (e.g., She ought not to do that./She oughtn't to do that.). Fourth, third person singular inflection for the simple present tense is sometimes present, but sometimes absent (Krug 2000: 199; Hopper and Traugott 2002; Kim 2012).

For the discussion, this paper is organized as follows: Chapter 2 shows the diachronic trajectories of *ought to* in its morpho-syntax and semantics, with discussion of mechanisms that work on each stage; Chapter 3 illustrates the corpus-based study of *ought to*, where frequencies and collocational strength will be dealt with; Chapter 4 elaborates the directionality of the evolution of *ought to*, based on the discussion in Chapter 2 and Chapter 3, in terms of Narrog's (2012) modality map of *ought to*; Chapter 5 concludes and summarizes our discussion.

The corpora employed in this research are ARCHER (A Representative Corpus of Historical English Registers)¹ for diachronic analysis and BNCweb (British National Corpus)² for synchronic analysis. ARCHER provides the frequencies and collocational distributions of *ought to* from EMdE (Early Modern English) to PDE (Present Day English). BNC is used to display distributions in the text modes and text domains of the modal verb *ought to*. Collocational strengths are calculated on the log-likelihood value among the statistic measurements.

¹ ARCHER version 3.2 (2013) is employed in this paper. ARCHER 3.2 is a multi-genre historical corpus of British and American English covering the period 1600-1999. The corpus has been designed as a tool for the analysis of language change and variation in a range of written and speech-based registers of English. The entire corpus totals some 1.7m words in 10 text domains, roughly two thirds of which are British English, while the remaining third is American English.

² Data cited herein has been extracted from the BNC online service, managed by Oxford university Computing Services on behalf of the BNC Consortium. All rights in the text cited are reserved. The complete corpus totals some 100m running words of text, of which 90m words are written and 10m words are spoken British English in the 1990s.

As a result of reanalysis, phonological reduction and cliticization, *ought to* is developing into *oughta*, a phonological instance of univerbation (Krug 2000), as shown in (1).

2.2 Polysemy in modality

Traugott and Dasher (2002: 137-144) present the paths of directionality in the development of the epistemic modal verb *ought to*, as given in (2).

- (2) developmental cline: premodal > deontic > epistemic
- a. Stage I: *ought* denotes possession.
 - b. Stage II (late OE): *ought to* develops deontic meaning.
 - c. Stage III (early ModE): *ought to* develops epistemic meaning

Stage I (premodal verb): Based on the work of Nordlinger and Traugott (1997) and its summarized version in Traugott and Dasher (2002: 137-144), *agan* ‘ought’ in OE originates in a transitive verb, meaning ‘to have, own, possess,’ which takes property, wealth, glory, power, etc. as its complements, as shown in (3).

- (3) V of possession:

<i>se</i>	<i>cing</i>	<i>let</i>	<i>geridan</i>	<i>ealle</i>	<i>þa</i>	<i>land</i>	<i>þe</i>
<i>his</i>	<i>modor</i>	<i>ahte</i>	<i>him to</i>	<i>handa</i>	<i>&</i>	<i>nam</i>	<i>of</i>
<i>hire</i>	<i>eall</i>	<i>þæt</i>	<i>heo</i>	<i>ahte on golde...</i>			
that	king	caused	bring-INF	all	those	lands	that
his	mother	<u>had</u>	him;self in	control	and	took	from
her	all	that	she	<u>had</u>	in gold		

‘the king caused all the lands that his mother owned to be brought under his control and took from her everything she had in gold...’

(1042 Chron A [DOE *agan*; Nordlinger and Traugott 1997: 305])

In (3) two *ahte* verbs take *ealle þa land* ‘all the land’ and *eall on golde* ‘everything in gold’ respectively as their objective complements.

Agan also occurs with nonfinite complements. The construction of [*agan* + nonfinite complement] was semantically close to ‘to owe,’ but implied possession and obligation, as shown in (4).

(4) *ahte* + nonfinite complement: ‘to owe’

*tuoege scyldgo woeron sume ricemenn an ahte to
geldanne penningas fif hundra oðer fífieih.
two debtors were certain:DAT rich-man-DAT one had to
pay pennies five hundred other fifty*

‘there were two debtors to a rich man; one had 500 pennies to pay/had to pay 500 pennies, the other 50.’

(late 10 the century Lindisfarne Gospels, p. 81 [DOE⁴; Nordlinger and Traugott 1997: 306])

In (4), *ahte to geldanne* ‘had to pay’ designates ‘have debt to pay’ or ‘owe somebody a debt.’ By the invited inference, the debt that A owes B is construed as an obligation that is imposed on A to B. In the construction of [*agan* + nonfinite complement], the meaning of ‘possession’ is bleached. By contrast, the invited inference of ‘obligation’ is strengthened.

Stage II (deonticity): By the end of the 10th century or the early 11th century, deontic auxiliary uses occurred. They are weakly deontic by implication. In ME (and beyond into MdE), the conceptual properties typically associated with *ought to* are as follows: the force is social and moral, the obligee is plural, generic or nonspecific, and the event is probable. Myhill (1997) refers to it as ‘group-oriented.’

In EMdE, we can find ‘individually-oriented’ deontic examples of *ought to*. Individual internal deonticity of *ought to* can be easily invalidated, as shown in interchangeability with *may* and *will* in (5). The strong deontic modal verb *must* cannot be used here in the context to be nullified.

(5) individual internal deonticity

1st Citizen: Once if [“If indeed”] he do require our voices, we ought not to deny him.

2nd Citizen: We may, sir, if we will.

3rd Citizen: We have the power in ourselves to do it, but it is a power that we have no power [“no moral right”] to do.

(1607-8 Shakespeare, *Coriolanus* II. iii. 1-5 [Nordlinger and Traugott 1997:311])

⁴ DOE is a shortened form of Dictionary of Old English, edited by Healey et al. (1994).

Invited inferences ('to possess' > 'to owe' > 'to be obliged'), metaphor (domain transfer from individual possession (premodal verb) to social obligation (modal verb)), and subjectification (group-oriented > individual-oriented) work in each step from the premodal verb stage to the deontic modal stage.

Stage III (epistemicity): In later ME, there are one or two examples that might be interpreted as having an epistemic reading. Nordlinger and Traugott (1997: 312) suggest that it is not until late in the EMdE period that the first clear epistemic constructions are noticed.

The epistemicity of *must* indicates strong certainty about the likelihood of an event with reference to beliefs and experiences of the speaker. In contrast, the epistemicity of *ought to* signals a probabilistic conclusion or tentative inference to be drawn about the feasibility of a state-of-affair, with the force between *must* and *may*. Horn (1972 [Nordlinger and Traugott 1997: 299]) represents the scales of deontic and epistemic modal verbs, *must*, *ought to* and *may* as shown in Figure 1.

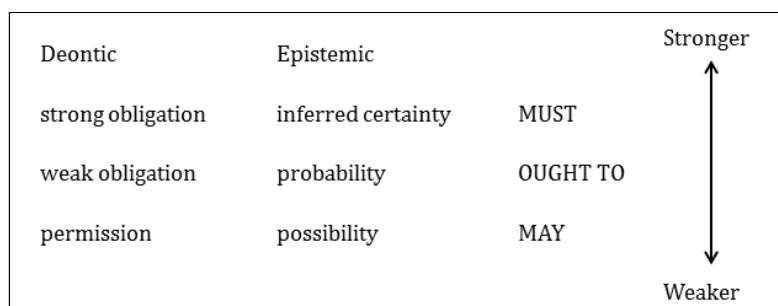


Figure 1. Scale of deontic and epistemic force

The epistemic examples of *ought to* are offered in (6).

- (6) a. She started out at nine. So she ought to (should) be home by now.
 b. You ought not to have any problems finding a good apartment in this city.

In (6a) the speaker concludes that she is probably home by now because she started at nine. The example in (6b) is decoded as suggesting that you will probably find a good apartment in this city, based on the scale in Figure 1.

The mechanisms of metaphor (domain transfer from deonticity to epistemicity), invited inference (to draw a probable or logical conclusion based on background knowledge or experiences), and subjectification (from group-oriented to individual oriented) have worked on the path from deonticity to epistemicity of the modal verb *ought to*.

This paper will deal with more evolved stages IV-VI, as shown in (7).

- (7) a. Stage IV: advisability or suitability
- b. Stage V: hypothesis
- c. Stage VI: politeness

Stage IV (advisability and suitability): Bybee et al. (1994: 182-3) glossed the meaning of obligation auxiliaries as ‘be fitting,’ ‘be proper’ in Lahu and Mwera. Nordlinger and Traugott (1997: 299-300) suggest that the modal semantics of *should* and *ought to* includes a notion of advisability and suitability. Coates (1983:73), Myhill (1996: 183), and Myhill and Smith (1995: 254) also mention the modal meaning of advisability and suitability in relation to *ought to*, as in the examples of (8) and (9).

- (8) advisability (Coates 1983: 73; Myhill and Smith 1995: 254)

‘I’ll make it clear to President Gorbachev that he ought to view this outcome of the summit very positively,’ Bush said.

(12 July 1990, UPI [Nordlinger and Traugott 1997: 299])

In (8) Bush advises Gorbachev to regard the outcome of the summit as a positive result.

Bybee et al. (1994: 182-3) and Akatsuka (1992) mention the suitability of the modal verb. *Ought to* can be construed to ‘it is suitable to inf...’ or ‘it is proper to inf...’ in (9).

- (9) suitability (Bybee et al. 1994: 182-3; Akatsuka 1992)

- a. (concerning a street festival)

‘I think we ought to do this again next year,’ Hirsch yelled at the dispersing crowd.

(15 July 1992, UPI, citation from Nordlinger and Traugott 1997: 299)

- b. 'Let's not call it the George Bush recession. It ought to be called the George Mitchell recession,' said Vice President Dan Quayle in reference to the Senate Democratic leader from Maine.

(17 Nov. 1991, UPI, citation from Nordlinger and Traugott 1997: 300)

Advisability and suitability are different from command or order. Advisability and suitability consider the face-saving of the addressee (intersubjectification), giving or suggesting the opinions of the speaker in a soft and mild way. Thus, advisability and suitability do not induce offensive feeling. Hopper and Traugott (2002: 106) argue that advisability and suitability derive from weak deonticity (metonymy).

Stage V (hypothesis (*ought to* + *have* p.p.)): one of the reviewers advances the insightful comment that hypothesis is an extension of deonticity of *ought to*, not of epistemicity. The construction with past tense, indicated by the use of a following perfective infinitive with *have*, designates the reversal hypothesis, based as it is on the actual result in the past that was drawn from what had or had not been done before. In OED, the construction [*ought to* + *have* p.p.] is first recorded in 1551. OED attests that 'you ought to have known' is construed as 'it was your duty to know, you should have known,' as shown in (10).

- (10) a. We haue left vndone those thinges whiche we oughte to haue done.
(1552. *Bk. Com. Prayer* Ge. Donf.)
b. You ought to have informed me at once.
c. You ought to have gotten a driver's license before driving a car.

The semantic extension from deonticity to hypothesis is accounted for by the mechanism of metaphor from physical obligation to hypothetical obligation.

Stage VI (politeness): The past forms of the modal verbs convey politeness. *Ought to* is also one of them. *Collins English for Learners* says, "you use *ought to* when politely telling someone that you must do something." For example, "you must leave" can be expressed with the [*ought to* + infinitive] construction, as shown in (11).⁵

- (11) a. I really ought to be getting back now.
b. I think I ought to go.

The polite expressions of *ought to* in (11) involves the face-saving of the addressee (intersubjectification).

3. Corpus-based Analysis

3.1 Frequency and normalized frequency in decline

Counting frequency is the most basic statistical measure, a simple tallying of the number of instances of a lexical item in question that occur in a corpus. A frequency per million is a normalized way to look at the relative count per million words (base of normalization) to the totality of the running corpus. Normalized frequencies (NF) per million (or relative frequency per million) are calculated as follows:

$$(12) \text{ NF per million} = (\text{frequency of the word in the whole corpus} \div \text{total size of corpus}) \times 1,000,000$$

The search tools of ARCHER and BNC corpora generate NF-per-million figures automatically. This paper adopts the figures from the corpora.

Let us look at the frequency of *ought to* in the BNC and compare it with the other weak deontic modal verb *should*. The modal verb *ought* ranks 16th with 5,826 hits, while the other weak deontic modal verb *should* takes 6th place with 108,970 hits in the frequency list of the BNC, as shown in Table 1.

⁵ The examples in (11) are quoted from <http://www.collinsdictionary.com/>.

Table 1. The sixteen most frequent words tagged as VM0⁶ in the BNC

	word	frequency		word	frequency
1	would	245349	9	might	59026
2	will	243821	10	'd	33173
3	can	231445	11	ca ⁷	30333
4	could	159818	12	shall	19505
5	may	112397	13	wo ⁸	15455
6	should	108970	14	used	15282
7	must	69752	15	let's	8037
8	'll	69148	16	ought	5826

Table 1 quantitatively proves that the label of *ought to* as a ‘marginal’ modal verb is also attributable to its low frequency, combined with its morphological and syntactic properties.

As far as the NF per million of the modal verbs is concerned, the frequencies of the modal verbs are on the decrease. Kim (2012), using COCA (The Corpus of Contemporary American English),⁹ shows that the core modal verbs are getting used less and less. *Ought* is also one of them. ARCHER shows its declination in frequencies from EMdE to PDE by 50-year periods. The figures in Table 2 are based on hits and NF per million words of *ought*.

Table 2. Hits and NF per million words of *ought* in ARCHER

period	hits	NF per million words
1600-49	43	421.04
1650-99	96	314.55
1700-49	73	243.4
1750-99	162	246.85
1800-49	102	167.05
1850-99	99	151.8
1900-49	92	142.35
1950-99	63	97.23
total	730	186.2

⁶ VM0 stands for modal auxiliaries in the BNC.

⁷ The form *ca* denotes a constituent of *can't*.

⁸ The form *wo* denotes a constituent of *won't*.

⁹ COCA was created by Mark Davies of Brigham Young university, which contains more than 450 million words of text and is equally divided among spoken tests, fiction, popular magazines, newspapers, and academic texts. It includes 20 million words each year from 1990-2012 and the corpus is also updated regularly.

Figure 2 presents the graphic format of Table 2.

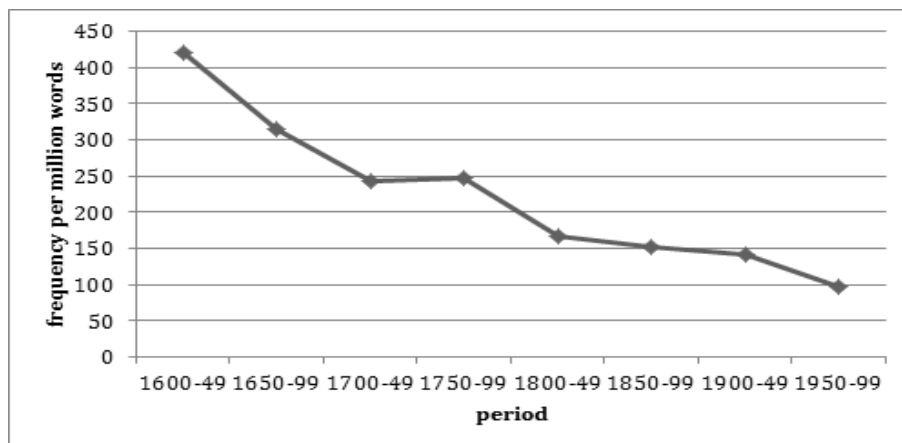


Figure 2. NF per million words of *ought* in ARCHER

The graphic representation in Figure 2 offers a more vivid depiction of the decrease in frequency of *ought*. Kim (2012) suggests that the fact that the modal verbs are used less is responsible for the increase of the use of modal idioms (e.g., *had better*, *would rather*, *be to*, etc.) and semi-auxiliaries (*have to*, *be about to*, *be bound to*, etc.).¹⁰

3.2 Distribution

Coates's (1983: 77) comparisons of nonepistemic uses with epistemic uses of modals report that nonepistemic uses of *ought to* greatly outnumber epistemic uses by 8:1, compared with roughly even numbers for *must*. Hoye (1997: 276) supports the claims of Coates: epistemic uses (tentative inference) of *ought to* and *should* account for only 20% against 80% of nonepistemic uses (deontic obligation), which sharply compares with 53% of epistemic necessity against 47% of nonepistemic necessity in the case of *must*. According to Bybee et al. (1994: 284) and Nordlinger and Traugott (1997: 6), these percentages reflect the fact that the epistemic uses of *ought to* and *should* are still not fully completed in contrast with *must*.

¹⁰ The classification of verbs follows Quirt et al. (1985: 137).

Now let us take a look at the text modes and text domains that *ought to* and *should* appear in. NF per million words indicates that *ought to* is used 2.3 times more frequently in spoken text mode than in written text mode. In contrast, the other weak deontic modal verb *should* shows almost the same NF per million words in spoken and written text modes, as demonstrated in Table 3.

Table 3. Distribution of *ought* and *should* in spoken or written text modes in the BNC

	No. of words	<i>ought</i>		<i>should</i>	
		No. of hits	Frequency per million words	No. of hits	Frequency per million words
Spoken	10,409,858	1,277	122.67	12,088	1161.21
Written	87,903,571	4,549	51.75	96,889	1102.22
Total	98,313,429	5,826	59.26	108,977	1108.47

Coates (1983:70) points out that *ought* occurs relatively infrequently, particularly in written language, compared with the other modal auxiliaries. The results in Table 3 corroborate Coates's findings.

Table 4 analyzes the text domains where *ought* and *should* tend to occur.

Table 4. Distribution of *ought* and *should* in text domains in the BNC

	<i>ought</i>		<i>should</i>	
	rank	Frequency per million words	rank	Frequency per million words
Imaginative Prose	1	101.72	8	851.4
Informative: Belief & Thought	2	91.52	4	1114.72
Informative: Social Science	3	61.82	2	1595.66
Informative: Commerce & Finance	4	53.67	1	1664.35
Informative: Arts	5	39.85	9	790.59
Informative: World Affairs	6	34.91	7	877.5
Informative: Applied Science	7	21.47	3	1228.36
Informative: Natural & Pure Sciences	8	20.16	6	956.84
Informative: Leisure	9	19.44	5	989.59
Total		51.75		1102.22

Table 4 can be converted into the graphical representation of Figure 3. Nine text categories are displayed on the X-axis, while the scale of NF per million words is arranged on the Y-axis. In Figure 3, the NF number of *ought* is very close to the X-axis in all text categories, while the NF number of *should* soars high over the X-axis.

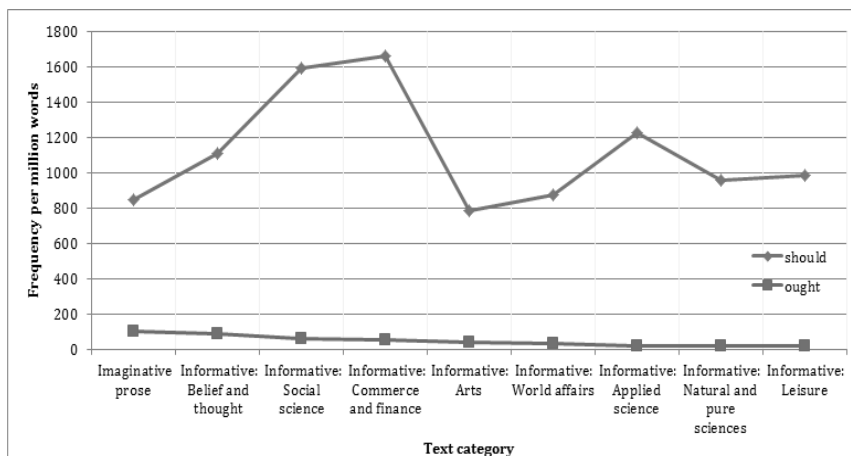


Figure 3. Distribution of *ought* and *should* in text domains in the BNC

Table 4 and Figure 3 show that the weak deontic modal *ought to* is used about twenty times less frequently used in total than the other weak deontic modal *should* in across-the-board text domains in the BNC. In terms of analysis of text domains in Table 4 and Figure 3, *ought to* is used most frequently in the domains of ‘Prose’ and ‘Belief & Thought,’ which take the first and second places in the analysis of the text domains. In contrast, the first and second rankings that *should* takes are ‘Commerce & Finance’ and ‘Social Science.’ Table 4 shows that *should* is most frequently used in monetary activity among social obligations.

Although *ought to* and *should* share very similar meanings, there are subtle differences in meaning and function between them. Ko (2008), citing Hoffman (1993), suggests that *ought to* expresses a stronger opinion than *should* when referring to public and moral obligation. Myhill (1996) argues that *should* and *ought to* are different in relation to the social norms they imply: *ought to* assumes there is some social agreement, while *should* is more related to individual feelings. Traugott and Dasher (2002: 138) argue that *ought to* describes mainly a moral or social obligation on the subject in its deontic modal uses. The results in Table 4, therefore, match, not perfectly but roughly, the erstwhile usages of *ought* in religious, moral, and social obligations, which are still preserved in contemporary English.

3.3 Collocation with log-likelihood

The log-likelihood formula gives a result of collocational strength. It measures the degree of the tie between the node word and each collocate (Lindquist 2009: 76-78).

The log-likelihood of *ought* in the BNC is shown in the following Table. Table 5 lists the 10 most frequent collocates of *ought* (node word) from one window on the left and from one window on the right (L1-R1) in the BNC.

Table 5. Log-likelihood calculation of the 10 most frequent collocates (L1-R1) with *ought* in the BNC

	Word	n	n expected	n observed	n texts	log-likelihood
1	to	2593729	268.067	5015	1523	22240.68
2	we	350517	36.227	695	404	2828.23
3	You	667363	68.973	593	337	1528.223
4	I	868634	89.775	559	336	1125.869
5	they	419562	43.363	342	271	823.339
6	She	351579	36.336	270	156	620.6133
7	really	46363	4.792	127	105	589.6343
8	he	639449	66.088	343	221	582.67
9	not	451291	46.642	284	215	556.4038
10	it	1054279	108.962	311	253	251.891

In Table 5, *ought* collocates most strongly with the infinitival particle *to*, marking the highest value of log-likelihood in the BNC, as expected. In the list of Table 5, the infinitive *to* is just followed by the personal pronoun *we*. In Table 5, the personal pronoun (PNP) *we* ranks top among the PNP collocates of *ought* in the value of log-likelihood in the BNC. It perfectly matches with the results that the ARCHER shows in the 20th century in Table 6.

Table 6. Log-likelihood value of collocates (L1-R1) of PNP with *ought* in the ARCHER

period	PNP	log-likelihood	period	PNP	log-likelihood
17th c.	he	34.409	19th c.	we	60.682
	they	26.631		they	42.418
	she	17.271		he	25.458
18th c.	we	74.296	20th c.	we	77.702
	they	53.116		you	69.948
	I	27.161		I	62.029

To put it simply, the fact that *we* takes the topmost rank in the PNP collocates of *ought* implies that *ought* has developed toward an increase of intersubjectification-orientation, comprising the stances of speakers and addressees.

Another thing worth noting in Table 5 is that *really* is the only adverb in the list of top 10 collocates of *ought*. Let us look at the adverb collocates of *ought* in the BNC. Table 7 below shows the top 10 adverbial collocates of *ought* from one window on the left and from one window on the right (L1-R1) in the BNC.

Table 7. Log-likelihood value of adverb-collocates (L1-R1) with *ought* in the BNC

	ADV.	Total No. in whole BNC	Observed collocate frequency	In No. of texts	Log-likelihood value
1	really	46,362	127	105	589,6396
2	not	451,261	284	215	556,4355
3	reasonably	3,015	26	15	178,9535
4	never	53,143	30	26	52,9176
5	therefore	22,971	20	17	50,0331
6	perhaps	33,498	20	19	37,1104
7	probably	26,465	16	16	30,0164
8	properly	5,515	6	5	17,3947
9	surely	6,021	5	5	12,0874
10	certainly	18,090	8	8	11,0037

Figure 4 graphically represents the results shown in Table 7.

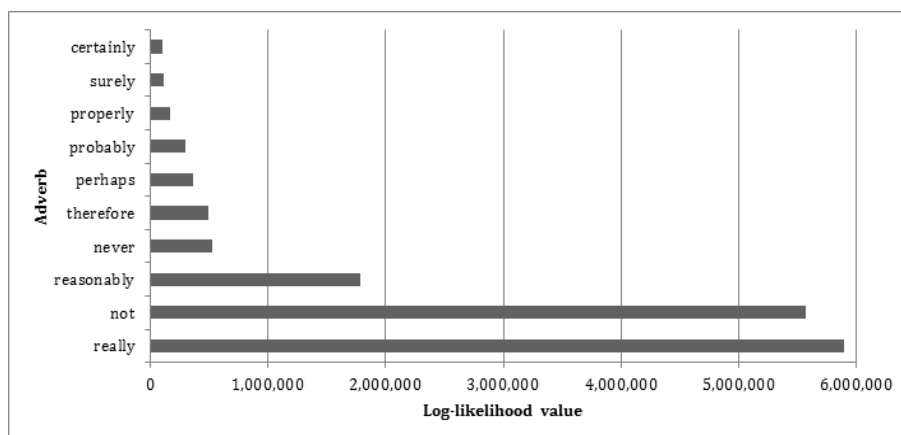


Figure 4. Log-likelihood value of collocates (L1-R1) of adverbs with *ought* in the BNC

In Figure 4, *really* overshadows the other adverbs in terms of log-likelihood value, except for the negative *not*. Although the observed collocate frequency of the negative *not* gets the first place in Table 7 and the value is 2 times higher than that of *really*, it can be said that the emphasizer *really* is by far the strongest collocate of *ought* when it comes to the value of log-likelihood.

Hoye (1997: 240) classifies *should* and *ought to* into the epistemic category of probability, while he categorizes *must* and *can't* into the epistemic category of certainty. Hoye (1997: 240) accommodates modal-adverbs of *probably*, *quite likely*, and *most likely* under the epistemic category of probability as shown in Table 8.

Table 8. Epistemic modal-adverb classification (Hoye 1997: 240)

A POSSIBILITY	B PROBABILITY	C CERTAINTY
<i>possibly</i> <i>conceivably</i> <i>perhaps</i> <i>maybe</i>	<i>probably</i> <i>quite likely</i> <i>most likely</i> <i>well</i> ¹¹	<i>certainly</i> <i>definitely</i> <i>indeed</i> <i>presumably</i> <i>surely</i> <i>for certain</i> <i>of course</i> <i>undoubtedly</i> <i>necessarily</i>

Table 8 suggests, contrary to findings discussed earlier, that *probably* should be the strongest adverb-collocate in the perspective of the weak deonticity of *ought*.

Van linden and Verstraete (2011: 55) argue that *properly* is one of the weak deontic adverbs, together with *appropriate*, *convenient*, *desirable*, *fitting*, *good*, *suitable*, etc. Taking the classification of Hoye (1997: 240) and Van linden and Verstraete (2011: 55) into consideration, ten adverbs in Table 7 will be recategorized in Table 9.

¹¹ Only after *could*, *may* and *might* (Hoye 1997: 240).

Table 9. Categories of the adverbs in Table 7

	category	adverbs
1	emphatic	<i>really</i>
2	epistemic	<i>certainly, surely, probably, perhaps, reasonably</i>
3	deontic	<i>properly,</i>
4	negative	<i>not, never</i>
5	connective (result)	<i>therefore</i>

It is argued in this paper that *reasonably* is classified into the category of the epistemic adverb in Table 9 since ‘reasoning’ indicates a mental process of drawing conclusions (epistemic), based on evidence. *Really* is categorized into the emphatic adverb, following Høye (1997: 161). He argues that *really* is by far the most versatile emphaticizer and freely combines with all modal verbs.

Traugott and Dasher (2005[2002]: ch. 4) argue that *in fact, actually, indeed* have developed from epistemic adverbials (EA) to discourse markers (DM). These adverbials do not question the truth value of the discourse. They connect the upcoming utterance and the previous utterance (Schiffrin 1994[1987]: 31). That does not mean that this paper assumes that *really* in all instances combined with *ought to* is only used as a discourse marker. But as simply indicated by the name tag ‘emphaticizer,’ *really* functions as emphasis on the discourse of the speaker. *Really* is, therefore, to be more discourse-oriented than deontic and epistemic adverbials, and further speech-act-oriented, like *in fact, actually, indeed*.

4. Discussion

The discussion in Section 2.2 started with the lexical stage of *ought*, designating ‘to possess’ in OE. The meaning ‘to owe’ of *ought to* infinitive form contributed to the development of the weak deontic modal verb from the lexical verb in late OE. The weak deonticity evolved to the weak epistemic modal verb in the early MdE (Nordlinger and Traugott 1997; Traugott and Dasher 2002: 137-144). Narrog (2012: 157) has developed a semantic map of *ought to* based on its evolution from weak obligation (deonticity) to inference (epistemicity), as shown in Figure 5.

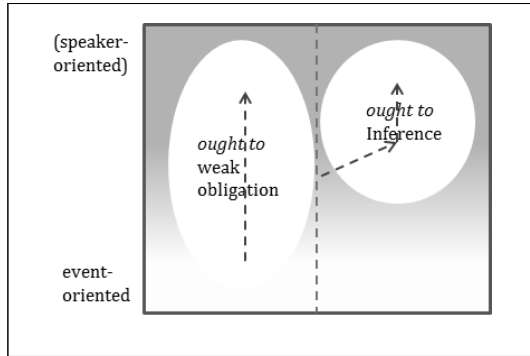


Figure 5. Fitting in *ought to* (Narrog 2012: 157)

Narrog (2012: 157) also argues that *ought to* has developed increasingly towards speaker-orientation and away from event-orientation along with the evolutionary path to epistemicity from deonticity, as shown in Figure 5.

This paper deals with further evolutionary paths of *ought to* beyond epistemicity in Section 2.2. *Ought to* has evolved into the modality marker and further to mood marker, designating advisability, suitability, hypothesis and politeness. The developmental path of *ought to* can be schematically represented in Figure 6 below.

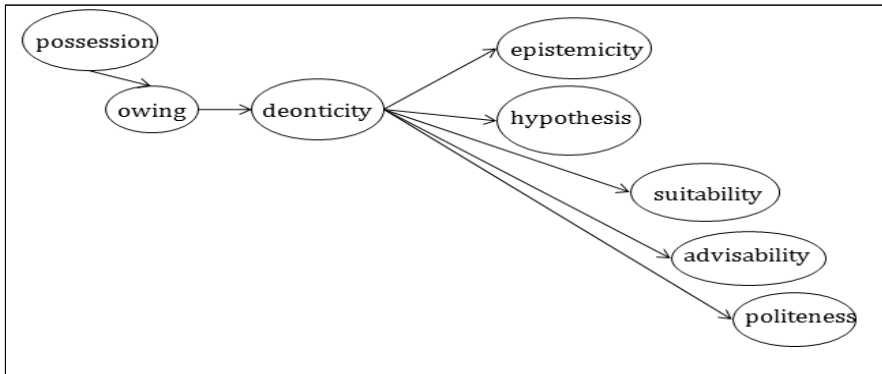


Figure 6. Schema for the evolutionary paths of *ought to*

The uses of advisability and politeness imply that the development of *ought to* has oriented from speaker-centeredness to speech-act, and further from a modality marker to a mood marker.

Narrog (2012: 115), based on his semantic map of modality and mood, also proposes that modal verbs evolved from being event-oriented through being speaker-oriented to being speech-act oriented. The developmental path of *ought* in Figure 6 supports Narrog's argument for evolution of modal verbs, as shown in (13).

- (13) a. event-oriented > speaker-oriented > speech act-oriented
 b. modality > mood > illocutionary modification

5. Conclusion

This paper addressed the grammaticalization of the weak deontic and epistemic modal verb *ought to*, based on the corpora study. *Ought to* has been categorized into the marginal modal verb because of its morpho-syntactic variations. Originally it meant 'to possess.' But its meaning of 'to owe' paved the way for the development into the weak deontic modal verb, decoding moral and social obligation, where reanalysis, metaphor and invited inference activated on the semantic and functional development. As indicated by its classification as a marginal modal, its frequency is relatively very low among the modal verbs. Its low frequency, to make matters worse, is decreasing, as proved by the diachronic analysis of ARCHER. *Ought to* developed into an epistemic modal verb in late ME, designating a tentative conclusion, in contrast with the strong certainty of *must*. The ratio of the non-epistemic use of *ought to* greatly outnumbers its epistemic use by 8:1 or 8:2, by comparison with roughly even numbers of *must*, which is interpreted as its uncompleted process of epistemicity. This paper also dealt with the advisability, suitability, hypothesis, and politeness functions of *ought to*. The corpus-based log-likelihood values of PNP- and adverb-collocates have proved that the evolutionary path of *ought to* has oriented from speaker-direction to speech-act, from subjectification to intersubjectification, and from a modality marker to a mood marker.

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Received: 2015. 07. 13.

Revised: 2015. 09. 25.

Accepted: 2015. 09. 25.