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On the history of English (and) word classes

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1 Introduction

Word classes (categories, parts of speech=PoS) are central to many linguistic theories, descriptive and prescriptive grammar, corpus linguistics. What do they buy us, and what do they cost? Keep in mind three widespread methodological or theoretical assumptions about word classes:

- (1) a. Word classes are established by distributional tests.
- b. In a given sentence, each word belongs to one and only one word class.
- c. In a PoS-tagged corpus, consistency of mark-up is of overriding importance.

Each of the assumptions (1) can be held or rejected independently. Will concentrate on case studies from histories of *of* (over 3m tokens in British National Corpus) and *to* (nearly 2.6m) – 2nd and 4th place in frequency, discounting punctuation tokens, and between them 5.72% of words in BNC. Both are prepositions in origin. For convenience I use PREPOSITION in traditional way = item prototypically with NP complement, forming a PP with it (cf. *Cambridge Grammar*, where P includes adverbial particles and subordinating conjunctions).

2 Of

2.1 The split into *of* ~ *off*

In OE, only one word. *Of* is predominantly a preposition of clear spatial meaning, 'from, out of'.

tag	spelling <of>		spelling <off>	
	N	%	N	%
P = preposition [or subordinating conjunction]	6,803	97.1	1	33.3
P in <i>þærof</i> (various spellings), tagged ADV+P	26	0.4	2	66.7
RP = adverbial particle	169	2.4	0	0
RPX, X = tag for unknown part of speech	7	0.1	0	0
totals	7,005	100	3	100

Table 1: Tagging of *of/off* in York Corpus of Old English

For the tag scheme of the Penn Corpora see Santorini (2010). The vast majority of examples have *of* as a clear preposition in a prepositional phrase, as in (2); only a small proportion of uses of *of* are coded as adverbial particles, RP, as in (3):

- (2) And þa ða he ut eode [PP of_P ðam bæðe]
and when he out went from the bath
- (3) & sloh þæs sacerdes þeow & [NP his eare] of_{RP} acearf
and struck the priest's servant and his ear off cut

These would correspond to *off* in ModE.

Excursus: Comparison with *on*

In OE *of* behaves much like other preposition/adverbs; cf. *on*, whose statistics are broadly similar. Purely prepositional use overwhelmingly dominant, + small cluster of adverbial particle uses. Note reversal in overall frequency between *on* and *of*: in OE, *on* is 5x as frequent as *of*, whereas in BNC, *of* alone is 4x as frequent as *on*. (*On* 22.5k pmw OE → 7.4k pmw PDE; *of* 4.7k pmw → 31k pmw.)

tag	N	%
P = preposition	33,183	98.4
P in <i>þæron</i> (various spellings), tagged ADV+P	154	0.5
RP = adverbial particle	358	1.1
RPX, X = tag for unknown part of speech	17	0.1
other	10	0.0
totals	33,722	100.1

Table 2: Tagging of *on* in York Corpus of Old English

In Middle English and later, *of* begins to serve as an alternative to inflectional genitive marking, becomes bleached of spatial meaning, and becomes the default relational preposition in many different patterns – hence boost in frequency through the ModE period. Word class status is unaffected, however.

Of uniquely splits into two separate items: *of* and *off*. Table 1 suggests that spelling <off> is very rare indeed in OE, and spelling <of> survives till the 17th century or later. The tagging in PPCME2 implies both that the split makes little progress during the ME period, and that the adverbial particle use is slow to take off. Random inspection suggests that the tagging of the Penn corpora is highly reliable, and that P is a preposition rather than (part of) a conjunction.

tag	spelling <of>		spelling <off>	
	N	%	N	%
P = preposition [or subordinating conjunction]	38,164	98.1	1,092	97.2
P in <i>þerof</i> , <i>herof</i> , <i>wherof</i> (various spellings), tagged ADV+P, WADV+P	604	1.6	27	2.4
RP = adverbial particle	136	0.3	5	0.4
X = tag for unknown part of speech, TO	3	0.0	0	0.0
totals discounting 'code', verbal prefix, etc.	38,907	100	1,124	100

Table 3: Tagging of *of/off* in PPCME2

tag	spelling <of>		spelling <off>	
	N	%	N	%
P = preposition [or subordinating conjunction]	59,527	97.3	261	37.2
P in <i>þerof</i> , <i>herof</i> , <i>wherof</i> (various spellings), tagged ADV+P, WADV+P	1,454	2.4	14	2.0
RP = adverbial particle	207	0.3	426	60.7
X = tag for unknown part of speech, ADJ, ADV	2	0.0	1	0.1
totals discounting 'code', etc.	61,190	100	702	100

Table 4: Tagging of *of/off* in PPEME with two supplements

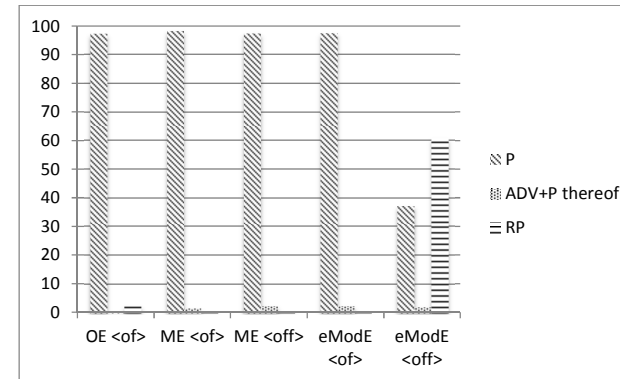


Figure 1: Proportion of prepositional uses of *of(f)* from OE to eModE

Table 4 suggests that the differentiation of the two words is well under way during eModE. No exact moment when split occurs. By late ModE it is clear that *of* and *off* are two wholly distinct words, as shown in Table 5:

	<i>of</i>	<i>off</i>
spelling	<of>	<off>
pronunciation of consonant	[v]	[f]
pronunciation of vowel	can be reduced to [ə]	never reduced to [ə]
word class	always preposition	preposition or adverbial particle
semantics	purely relational	spatial (or metaphorical extensions, or Aktionsart etc. values in phrasal verbs)

Table 5: *Of and off* in Present-day English

2.2 Quasi-ellipsis

Unlike most preposition/adverbs, *of* has **always** been overwhelmingly transitive (cf. *at*, *with*). In late OE/early ME, it could occasionally precede a clause with properties of both adjuncts and complements; see QUASI-ELLIPSIS in Denison (1985: 200, 1993: 141-3). In examples like (4)-(5), never numerous, *of* is behaving unlike either a traditional preposition or an adverbial particle:

- (4) þe deade nis noht of; þah he ligge unburiet (c1230(?a1200) *Ancr.* 95a.17)
 the dead(OBL) not-is nothing from though he lie unburied
 'It does not matter at all to a dead man if he lies unburied'
- (5) ah ful wel he let of hwen ei seið þet ... (c1230(?a1200) *Ancr.* 82b.17)
 but full well he thinks of when anyone says that ...
 'but he is very pleased when anyone says that ...'

Quasi-ellipsis critical to early development of prepositional passive in a family of closely similar combinations (*leten of/by*, *setten of/by*, *tellen of/by* 'regard, esteem, think of'). By 14/15C, the prepositional passive extended to most prepositions (given appropriate syntactic and semantic relations between V+P and NP complement), and *of* had reverted to being purely prepositional.

2.3 Multi-word prepositions

In OE there is an incipient multi-word preposition *ut of* (173 times as a string in YCOE, tagged as RP followed by P). Example (2) shows that the two items can be separated in OE. Gradual loss of separability over time as *out of* begins to lexicalise, but separate tagging does no harm.

ModE has many so-called compound prepositions ending in *of*, always purely prepositional: *in front of*, *by means of*, etc. Single items, with whole string belonging to word class P, or separate words, where *of* is P? (Aarts 2007, Denison 2010: 122, Hoffmann 2005, Huddleston & Pullum 2002: 618-23, Quirk et al. 1985: 670-3) As a combination lexicalises, balance of plausibility between two analyses may change. Change is gradual. PPCMBE, a corpus which stops at 1914, is on balance justified in tagging *on behalf of* as three separate words, *on_P behalf_N of_P*, but variation with *on X's behalf* is disappearing in PDE (Denison forthcoming, 2012). So a historical corpus continued to PDE might justify different lemmatisations for recent decades as against older periods, violating (1)c. Even stronger case for *by dint of* or *in spite of*, which have no alternative with 's. Despite their fossilised and idiomatic nature, Huddleston & Pullum (and others) still argue for a **syntactic** analysis as three separate words with one of two internal structures (neither involving a compound preposition) (2002: 621). Beckner & Bybee (2009, cited by Reynolds & Pullum in prep.) adduce semantic and corpus evidence for a compound preposition analysis **alongside** the separate-word analysis:

Yet our position predicts that a word sequence may gradually form a unitary status even while component words are partially activated on each use. [...] [N]ote that even as *in spite of* strengthens in constituency, it

does not instantaneously become fused into an indivisible unit. The sequence continues to maintain some connections to the separate words *in*, *spite*, and (most importantly here) *of*. (2009: 40)

Much theoretical linguistics has striven to exclude all redundancy from analysis and from mental grammars, but the tide is turning; see for example Jackendoff (2011). Formal and structural grammarians tend to put the burden of proof on the lumpers rather than the splitters, as if any string must be considered as made up of independent words until proven 100% lexicalised. This ignores gradual skewing of behaviour as a result of lexicalisation.

2.4 SKT-constructions

I use the term SKT-CONSTRUCTIONS for binominal structures involving $N_1 = \textit{sort, kind}$ or *type*:

- (6) (...) N_1 of (...) N_2

Among a whole network of related constructions are (examples from BNC):

- (7) the Canadians had one sort of sovereign, and the British had another sort (A69 1471) – REFERENTIAL CONSTRUCTION
- (8) There was a kind of inevitability about the whole proposal which appalled Alexei. (G17 1172) – QUALIFYING CONSTRUCTION
- (9) It kind of built his confidence with each successive flask (A14 937) – ADVERBIAL

See Denison (2002, 2011), Keizer (2007) (I follow her nomenclature), Brems & Davidse (2010). In the referential construction, (7), *of* is routinely a preposition. The adverbial use of (9) lacks any complement nominal, and 'of has been incorporated into a unit with a preceding noun' (Huddleston & Pullum 2002: 621). But at what stage did reanalysis occur? There are several candidates for the best synchronic analysis for (8), but I will confine discussion to two:

- (10) a [[kind_N [_{PP} of_P inevitability]]]
- (11) a [kind of] inevitability

In analysis (10) *kind* remains a noun, postmodified by a PP headed by *of*, like referential construction, (7). In (11), *kind of* recognised as unit acting as premodifier of N_2 *inevitability*, like the premodifier use in adverbial (9).

Justification for analysis (11) includes formal properties which differentiate qualifying from referential construction (7), plus semantic and pragmatic differences:

	referential	qualifying
D₁	free	indefinite
N₁	<i>sort, kind, type</i>	<i>sort, kind</i>
N₁ number	free	singular
primary stress	D ₁ or N ₁	N ₂
N₂ omissible	yes	no
semantic head	N ₁	N ₂
discourse function	discourse topic or anaphor	hedge, often metaphorical
style	neutral	informal

Table 6: Referential vs. qualifying SKT, from Denison (2002) (after Keizer)

As with compound prepositions, both analyses, (10) **and** (11), may remain in play to some extent. In analysis (10), *kind* remains N and *of* is P. Apart from maybe 'explaining' why *of* is unstressed, the word classes tell us little. In (11), word class would be assigned if anything only to the unit *kind of*. *Kind of* in (8) is not A, or at least very far from prototypical A. Semantically somewhat like D, especially if analysed as a *kind of*. When *kind of* is extended to act as a modifier of various XPs, as in (9), the word class becomes truly problematic: neither D nor A would be appropriate for a VP modifier, while Adv would be odd for an NP modifier. Quirk et al. list it as a COMPROMISER or DOWNTONER

(1985: 598, 602), at least when used as a VP-modifier, a possible function of Adverbial, but the word class is not[?] discussed, either for the whole string or its two component words. Marianne Hundt (p.c. 15 Aug 2012) observes that it is in effect a (compound) pragmatic particle; where the pragmatic function dominates, traditional word classes are not that helpful.

Kind of can also be used as a style disjunct. Again, word class is not particularly pertinent.

- (12) It's a little cartoon, it's just cheap and enj-- like Bart Simpson kind of. (KPG 4168)
- (13) 'Flower is a message?' said the boy.
'Yes. Kind of.' (CEU 4388-90)

2.5 *Have ~ of*

An entirely new use of *of* has arisen at some point since the 18C:

- (14) the servant to the old Lady I sho~ld not of thought of after what had past, but I wonder at no_thing (1773 Corpus of 18C Prose)
- (15) I should be very happy to of seen m^{ts}. Orford at Leek (?1774 Corpus of 18C Prose)
- (16) I would of gone Long before this but I still expected Letters from you as I wrote often to you. (1796 CORIECOR Chambers)
- (17) I never could of thought that force Could turn affection in its course. (1814 [OED])
- (18) Had I known of your illness I should not of written in such fiery phrase in my first Letter. (1819 Keats, *Letters*)

Edith Wharton makes *of for have* a verbal tic of Zinnie, a spoilt child - merely eye-dialect: implied speech in example (19) is actually fully standard; likewise (20) as far as *of* is concerned (though *hadn't ought* is non-standard).

- (19) "If she really feels like that I'd of thought she'd of sent me a present," she [Zinnie] objected doubtfully. (1928 Edith Wharton, *The Children* (Virago, 1985), xxvii.291-2)
- (20) "Yes, 'n' Judy hadn't ought to of sneaked away and left us all like that ... — ought she of?" Zinnie appealed indignantly to Mrs. Sellars; (ibid. xiii.132)

The spelling <of> in examples like (14)-(20) only occurs for infinitive *have*, never (or rarely) for the general present form. Infinitive *have* is special. Brian Joseph and Joyce Tang Boyland found that

there are speakers who used the preterite form in modal perfect contexts [e.g. *should've took* – DD] and but [*sic*] the standard past-participle form in regular perfect contexts. For these speakers at least, the modal perfect is losing its connection to the perfect. (Boyland 1998: 4)

Infinitive *have* may be grammaticalising separately from rest of *have*-perfect paradigm, its semantics is becoming associated with modality/non-assertiveness, hence irrealis. NB. double use *would have liked to have gone*, frowned on by prescriptivists but not ungrammatical (Denison 1998: 140).

So <of> in (14)-(20) is more than a mere misspelling, even if made possible by homophony between the unstressed preposition *of* and the verb *have* as [əv]. But spelling <of> is relatively unusual in representing **only** a verb (rarely as N in a *must-have* or *the haves*), while <of> is unusual in spelling a form which is uniquely a pure preposition. Therefore when writers get it 'wrong', it is almost certainly significant for word class assignment. There is strong anecdotal evidence that many educated young Britons do not realise – let alone assume – that there is any connection with the verb *have*, and the occasional pronunciation [ɒv] is another strong indication.

Back to Zinnie. The *of* morpheme in her (21) is genuinely non-standard. That is a pattern with quite a long history, the element in question variously spelled *have/ve/of/ha/a*:

- (21) "Terry's with his tutor at present," said Blanca ...
"But he said he wouldn't have come down even if he hadn't of been," chimed in Zinnie (1928 Edith Wharton, *The Children*, viii.71)

- (22) 'If I had ha' seen Nancy, I should ha' given her my mind very different. ...' (1864-6 Gaskell, *Wives & Daughters* [WC] xlvi.577) [Mrs. Goodenough]
- (23) but I wish he'd ha' told me (1864-6 Gaskell, *Wives & Daughters* [WC] lii.646) [Squire Hamley, bluff old-fashioned gentry]
- (24) Little Dombey was my friend at old Blimber's, and would have been now, if he'd have lived. (1848 Dickens, *Dombey* xxxii.445.12)
- (25) Now if you'd've told us that last Thursday we'd've thought (BNC KCX 3528)
- (26) We were offered a flat, which would of mea-- if we'd of accepted it would of meant we would have to of sold every stick of furniture because the rooms were not large enough (BNC F82 77)
- (27) if it hadn't a been for Old Cribb there wouldn't have been none (BNC H09 1152)

When the first verbal morpheme is contracted to 'd, as in (23)-(26), unclear whether its equivalent full form is *had* or *would*. Possibly the construction licenses a blended contraction where **neither** full form is widely accepted.

As for the non-standard insertion seen in (21)-(27), the morphosyntax is odd for either *had* or *would* as first verb. Extra morpheme only occurs in clauses which are non-assertive: conditional protases, counterfactuals, unrealised wishes, and so on. There is no (28)b beside (28)a:

- (28) a. These neighbours had lived there for a number of years (BNC AC7 1413)
- b. *These neighbours had've/'d've lived there for a number of years

What is the word class? There have been at least two generative attempts to classify it as a preposition because of the spelling <of>: Coates (1989) and Kayne (1997); see also (Cheshire & Edwards 1993), (Sampson 2002), (Denison 1998: 140-2, 210-2, 2007a, b). If anything, it is an invariant grammatical item confined to the verbal group (cf. negator *n't*), so probably Adv. The development casts doubt on the analysis of what was a clear verb:

- (29) I've_v eaten it
- (30) I'd_v eaten it
- (31) I'd've_{ADV} eaten it
- (32) I could've_v eaten it

In (29), 've = *have* = 1 sg pres of V. In (30) 'd = *had* = 1 sg past of V. In (31), probably 'd = *had* = 1 sg past of V, while 've = particle (Adv?) and can be regarded as a form of *of*. Now 've in (32) resembles both V and ADV uses. The former maintains nice generalisations about patterning of English auxiliary system. For speakers who have (31), we must revisit the apparently standard string (32) and worry whether (or delight that!) it is now some sort of blend with dual inheritance. There is strong but not absolute preference for cliticised forms; cf. Boyland's data (1998: 3), where tensed verb + clitic exhibits the NICE properties supposed to apply to tensed operators alone:

- (33) N: "You should've n't took all the brick cheese!" (child data, Bowerman)
- (34) I: "What would've you done?" (JTB)
- (35) C: ("I should've read the error message.") "Yeah, so should've I." (JTB)
- (36) E: What could have she been reading? (fluent non-native speaker, JTB)

These examples do not involve the 'superfluous' morpheme but rather point to cliticisation (and further grammaticalisation) of the *have*-perfect when used with modals. Some further examples:

- (37) a sentiment he would have probably denied (1961 Brown corpus G65 1880)
- (38) 'I should've never went on a stupid blind date. They never work out.' (1992 Armistead Maupin, *Maybe the Moon* xv.225)
- (39) might 've he continued to elude police, had that fourth murder not occurred? (COCA 1999)

Thus (33)-(39) provide evidence of incipient weakening of the neat auxiliary patterning that was the strongest motivation for assuming that 've in (32) was **purely** the verb *have*.

3 To

What are usually regarded as three distinct words in PDE share a common origin, according to the etymological reference works: *to* as conventional spatial preposition, as infinitive marker, and as intensifier spelled from the 16C with <oo>, *too*. I am concerned here with the infinitive marker.

3.1 Infinitival *to*

A syntactic word, usually proclitic to an infinitive (Pullum 1982: 185). Four possible word classes:

- (40) a. preposition
- b. word without category
- c. auxiliary verb
- d. VP subordinator

In OE traditionally seen – in origin at least – as normal prepositional *to* followed by nominal form of verb with dative inflection (OED s.v. to prep., conj., and adv. B). (Los asks whether the verbal ending was inflectional or derivational; she also questions to what extent the infinitive was still syntactically nominal by the historical period of OE (1999).)

Some parallel examples where an infinitive represents goal or destination, like an ordinary NP complement of *to*:

- (41) a. Ac hwi ferde ge to seonne þone man mid hnescum reafum gescryddne (Lk(WSCp))
But why went you to see the man with soft robes clothed
- b. hi ferdon to Sinai westene (Exod. B8.1.4.2)
they went to Sinai desert

Los cites a coordination of *to*-PP and *to*-infinitive (1999: 21). Even if *to* can could safely be labelled as P, the infinitive would be a problem for word class: nominal inflectionally and in its relation to *to*, but verbal syntactically in its relationship with adjuncts and complements. (Cf. the *-ing* gerund in ModE.) However, preposition-like behaviour weakens from earliest records:

With infinitive in substantival relation. Equivalent to a noun or gerund: *to* being ultimately reduced to a mere ‘sign’ of the infinitive without any meaning of its own. (OED sense B. III)

When is *ultimately*? In PDE the P analysis for *to* is disfavoured (Huddleston 2002: 1184-5). Instead *to* is generally just called an infinitive marker – in effect a unique member of a minor category, given that *at*, *till* and *for to* are no longer current. Since word classes are for capturing generalisations, belonging to a single-member class is equivalent to belonging to no class at all, what Pullum calls SYNCATEGOREMATICITY (1982), a violation (albeit generally ignored) of assumption (1)b. Pullum prefers to analyse infinitive-marking *to* as a highly idiosyncratic auxiliary verb. The principal argument in favour is behaviour under post-verbal ellipsis, aka AUXILIARY STRANDING (Huddleston 2002: 1519-26), parallel to auxiliary verbs (‘operators’) (Pullum 1982: 199-200) (my examples from BNC):

- (42) He wants to break away. He means to _ . (AT7 1835)
- (43) But one look at her face told me she had _ . (A6E 583)
- (44) I would like to go with him if I could _ (EVG 1899)

Clearly, though, if *to* is a verb, it is an odd one. Pullum argues that it is an obligatorily untensed auxiliary. Like other untensed auxiliaries before an ellipsis site, it cannot carry stress:

- (45) a. ‘Oh, you couldn’t have,’ Mrs Yardley protested. (A0D 1084)
- b. *Oh, you couldn’t **háve**
- (42)a. He wants to break away. He means to.
- b. He wants to break away. *He means **tó**.

That *to* can plausibly be categorised as a verb is indeed ‘unexpected’ (Pullum 1982: 184): verbs are usually thought of as predicators, highly inflected, prototypically about events or actions. Infinitival *to* is none of these. Pullum (1982: 200-1) quotes Zwicky & Levin (1980), who coined the term INFINITOID for a class consisting of the infinitives of *be*, of perfect *have* and (in BrE) of supportive *do*, plus *to*. These share the property of obligatory stresslessness when just before the deletion site in Verb Phrase Deletion. By analysing *to* as an untensed verb, Pullum makes INFINITOID a natural class instead of a stipulated disjoint set (and removes the need for a special name).

In a solo chapter of the *Cambridge Grammar*, Huddleston weighs up this analysis against an alternative, that infinitive-marking *to* is a VP subordinator that belongs with the clause subordinators *that* and *whether*, and comes down for the latter (2002: 1185-7). Levine (2012) reviews their evidence, adds another fact, and swings the pendulum decisively the other way, showing that Pullum’s 1982 analysis of *to* as an auxiliary verb is far preferable. Yes, if we can only have one – but do we need to choose between them? Huddleston’s classification brings out one set of analogies, namely of semantically bleached non-prepositional words that introduce subordinate clauses by forming a constituent with them. One well-known fact that is not (as far as I know) discussed by these three scholars is that such constituents can act as subject, often extraposed:

- (46) a. That he was deficient was obvious (BNC 447)
- b. It was obvious that she was very upset and alarmed. (CEY 2401)
- (47) a. Whether this is a true oral papillae or a modified tentacle scale is uncertain. (H79 1033)
- b. It is uncertain whether words alone can amount to an assault. (HXE 2006)
- (48) a. To act in such a way is wrong (B08 686)
- b. It would be wrong to paint a gloomy picture. (ED7 2848)

BNC has no examples tagged as such in initial position and only a few dubious extraposed ones:

- (49) a. *Have eaten too much is foolish.
- b. *It’s foolish have eaten too much.
- (50) a. *Be found in possession is foolish.
- b. *It’s foolish be found in possession.
- (51) You know you you m– you might be able be a little bit blameworthy in some instances? (FM1 54)
- (52) if you come and ask me the same question I would be able be in a better position to give you an answer. (HMN 1123)
- (53) it’s better be calm I don’t care (KSS 2880)

Levine pours scorn on classification of *to* as a subordinator, since it can be preceded by the subordinator *whether*, (54), whereas “‘subordinator’ doubling’ is not permitted’. But *whether* can introduce a subordinating conjunction like *because* (“preposition” in H&G’s terms), (55), and even occasionally the clause subordinator *that*, (56)-(57):

- (54) And I didn’t know whether to laugh with pleasure or to cry with pain. (HD7 2455)
- (55) Whether because they had ceased to be pleased about her birthday or simply because they were tired, she did not know. (BNC A0L 776)
- (56) As long as I do that, at any rate, Pa and Ma will always find something to reproach me with, whether that I don’t obey the rules of decorum or that I have an indelicate way of expressing myself or that I’m breaking ties or something of the kind. (WebCorp Vincent van Gogh Letter 186 To Theo van Gogh. Etten, Friday, 18 November 1881. <http://vangoghletters.org/vg/letters/let186/letter.html>)
- (57) (1) Whether creatures always existed.
- (2) Whether that they began to exist is an Article of Faith. (*Basic Writings of Saint Thomas Aquinas: God and the order of creation* I.447, ed. Anton C. Pegis, c.1945)

Huddleston’s assignment of word class would put *to* in a class of its own, or possibly a class of three if added to the clausal subordinators *that* and *whether*. Pullum’s classification focuses on the verbal component of clause. The strongest evidence for verbal status, ellipsis a.k.a. stranding, is a relatively recent innovation ((58) is very early):

- (58) I think I could come as often again as I used to. (ARCHER 1766aadm.x4a)

- (59) but as he had bothered me to, I consented. (PPCMBE HAYDON-1808,1,34.871)
 (60) Pufpace Not a farthing, unless I am obliged to , by law. (1812 COHA)
 (61) you ever hear the like before?' Never, Julia! and hope never to , again. (1822 COHA)
 (62) 'You won't forget?' said Newman.
 'I am not very likely to,' rejoined Nicholas. (1838-9 Dickens, *Nickleby* xxii.271)

For discussion of early examples, see Visser (1963-73: §1000), Warner (1993: 64), Denison (1998: 201-2). And of course it is not the prototypical V that *to* is being grouped with, but a set of auxiliary verbs – a minor category that didn't even exist before the late 16th century, according to Lightfoot, though many have argued that the period of emergence was long-drawn-out and started much earlier. These auxiliary verbs – M, *have*, *be*, *do* – all differ amongst one another, but M, *have* and *be* are arguably stative, while M and a number of newer accretions to the class are exhibiting less and less inflectional variation. In fact *to* is assigned to an even smaller subgroup, the untensed auxiliaries. Clearly, whichever of the word class assignments (40)b,c,d is preferred for infinitive-marking *to*, the word class in question has very limited membership, and the number of distributional generalisations involved may be quite small.

4 Open and closed classes

These three polarities in relation to word classes are all slightly different:

- (63) a. open ~ closed
 b. lexical ~ functional
 c. major ~ minor

In an unpublished paper, Reynolds & Pullum (in prep.) show convincingly, using corpus data mainly from various Google giga- and tera-corpora, that it is impossible to draw a strict line between open and closed word classes: **all** are open to new members, some more than others. I believe the same goes for the lexical ~ functional polarity, unless of course it is hard-wired into a formal model of grammar as an absolute binary choice. To the extent that the grammatical words *of* and *to* belong to word classes, these are classes of small membership, often highly language-specific and indeed period-specific: classes come into existence and change rapidly (e.g. Modal in last few centuries). The so-called open classes are represented throughout the history of English, and although there have been major losses and accretions of membership, the classes themselves seem intuitively to change less, even though they are more open to new members. (The hierarchy of openness tentatively offered by Reynolds & Pullum has noun > verb > adjective > adverb at the top end.) As argued in (Cort, Denison & Spinillo 2006).

One [way of generalising from minor to major classes] is to assert that any category is simply the average of its members' properties, and that when either the membership or individual properties of members change, so must the category. With a small and recent category like M or D, such categorial change is evident. With a larger category like N or V, small changes in membership or distribution make a less perceptible difference to the overall 'average', and so such categories look superficially very stable. However, over a long enough period of time, even major categories change their morphosyntax.

5 Intermediate conclusions

Revisit case studies to see what they tell us about word classes and vice versa:

- 2.1 *of* ~ *off*: unchanging word class of *of* disguises huge change in semantics, in grammatical significance, in frequency; gradual split with *off*, likewise arguably involving no change of word class, hides ?change of pronunciation
- 2.2 Quasi-ellipsis: short-lived change in behaviour which is difficult to model in word class terms, nevertheless implicated in the origins of the prepositional passive
- 2.3 Multi-word prepositions: should word class apply to individual components or whole string? And individual analysis becomes decreasingly revealing of behaviour – for any but last element, *of* – the more frozen the compound preposition becomes.

- 2.4 SKT: dual analysis possible for qualifying construction, and word class analysis problematic for adverbial usage, which is primarily pragmatic.
- 2.5 *Have* ~ *of*: word class is highly relevant to non-standard usage with extra morpheme, with probable reanalysis of 've from V to particle or Adv. However, this calls into question affinities of infinitive of *have* in standard.
- 3.1 Infinitival *to*: Word class assignment requires use of (mostly) infrequent patterns of fronting and so on and groups *to* with very few other elements. Best potential grouping is itself rather recent. The older grouping retains some explanatory value. Argues against unique word class.

Elsewhere I have shown that some items are underspecified for word class assignment, where both semantics and structural alignment are unaffected by choice of terminal symbol (e.g. Denison 2010). Situation can obtain when a given word occurs in some contexts clearly as one class, in others clearly as a different word class (but with the same meaning), and in yet other contexts where the word class distinction is neutralised. So in (64), *genius* is clearly N, in (65) it is A, and in (66) it is unhelpful to choose between N and A (assuming that the writer has both N and A values for *genius* in their lexicon). In similar fashion, *various* is A in (67), D in (68), and either or both of A and D in (69):

- (64) He's a genius, unbelievable. (Mo Farah, quoted <http://www.telegraph.co.uk/sport/olympics/athletics/9470759/Mo-Farah-my-move-to-the-US-transformed-me-from-a-weaking-who-ran-like-a-girl-into-an-Olympic-champion.html#>)
 (65) This series is arguably the most genius, the most entertaining and the most poignant chapter in the Father Ted chronology. (2001 <http://www.amazon.co.uk/product-reviews/B00004ZBXX> 8.09.2001 <accessed 3 Nov. 2009> [WebCorp])
 (66) everyone else's genius tactics also came up blank. (<http://www.podiumcafe.com/2012/7/28/3198318/vino-forever-vinokourov-wins-the-olympic-rr-from-the-break>)
 (67) [...] as a way of making his readers see a complex and various world. (BNC EC8 178)
 (68) groups who are trying to bring various of the Olympic sponsors to justice
 (<http://fleshgrass.wordpress.com/2012/08/11/olympics-ideal-actual/>)
 (69) The IAAF said they had been collecting samples from various athletes in the build up to the Olympics
 (<http://www.wky.com/olympics/Nine-athletes-banned-for-doping-offenses/-/15411752/15701336/-/r12bn5/-/index.html>)

In other cases, dual resemblance involves both a word class difference and a structural difference. This is often treated historically as (a catastrophic) reanalysis. Beckner & Bybee (2009) argue that reanalysis can be gradual; cf. *have*~*of* in §2.5, both gradual and very much incomplete to date.

An item that belongs to one word class may be coerced in its behaviour by a construction. Thus the verb *tweet* in its Twitter-related sense (not yet in *OED*) has developed a consistent pattern of use that resembles various of *say*, *speak*, *transmit*, *text*, *write*:

- (70) If you're at the movies, don't tweet. (COCA 2012)
 (71) [Sarah Palin] tweeted a picture from Alaska. (COCA 2010)
 (72) Many Olympic track and filed [*sic*] athletes have tweeted their displeasure with what is known as Rule 40.
 (<http://www.facebook.com/donn.cabral.runs/posts/288269824614147>)
 (73) David Cameron will face pressure to remove the Tory whip from the Conservative MP Aidan Burley after he tweeted that the Olympics opening ceremony was "multicultural crap".
 (<http://www.guardian.co.uk/politics/2012/jul/28/olympics-opening-ceremony-multicultural-crap-tory-mp>)

However, it can be recruited by the *way* construction (Israel 1996) and used there with a different kind of object:

- (74) Celebs tweet their way through the London 2012 Olympic Closing Ceremony
 (<http://www.dailymail.co.uk/tvshowbiz/article-2187842/Celebrities-tweet-way-London-2012-Olympic-Closing-Ceremony.html#ixzz23Ykv8JOH>)

This kind of coercion may affect subcategories or even major word classes (e.g. proper name ~ A). Thus there is traffic both ways between countable and mass nouns. Mass nouns behave like count nouns in portion or serving settings (*two beers*, *a coffee*), and vice-versa in contexts like *showing too much leg*.

- (75) there are probably around a million tons of pet dog in the US alone (<http://what-if.xkcd.com/7/>)
 (76) The opening ceremony is So Danny Boyle ! (<http://twitter.com/dansmyrealtor>)

6 What are word classes (for)?

I do not believe that word classes are Aristotelian categories with clean boundaries between them. Aarts discusses gradience between classes – what he calls INTERSECTIVE GRADIENCE (e.g. Aarts 2004, 2007) – but attempts to remove most cases by counting up somewhat arbitrarily chosen features and hoping not to get a numerical dead heat. If this approach is designed to save the word class as the basis of algorithmic syntactic analysis, it may be misguided synchronically, and it is quite unhelpful diachronically. If we treat word classes as generalisations (whether by speakers or linguists), then it is obvious that in some cases a given item may share patterning with (= show resemblances to) more than one item simultaneously. A familiar case: *near*, as P or A. If so, degrees of resemblance may be unequal, but this need not invalidate the lesser resemblance.

Word classes display prototype effects, but whether they are actually best modelled with Prototype Theory is less certain (Taylor 2004). The minor category of Modal verbs certainly shares many morphological, syntactic and semantic properties which distinguish them collectively from all other verbs, but quite apart from recent falls in frequency of core modals (Leech et al. 2009), arguably there is no one core modal which carries **all** the properties:

- *Can/could*: retain some normality in the distinction between present and past tense; epistemic meanings limited.
- *May/might*: obsolescent (certainly in AmE), no longer treated as a present ~ past pair, loss of negatives **mayn't*, ?*mightn't*.
- *Must*: does not normally have past tense reference, and for most users therefore cannot appear in the apodosis of an unreal conditional.
- *Shall*: obsolescent except in 1st person interrogatives.
- *Will/would*: lack typical semantics.

Family resemblance or the cluster concept may work better. But without default inheritance and overrides, and especially dual inheritance, word classes are no more than a convenient expository generalisation. You can always go for finer-grained classes, and in the extreme case, every single word may be in a class of its own (Gross 1979).

Many of the mini-histories I have been looking at involve lexicalisation and grammaticalisation. They concern not individual words but words in, and part of, particular patterns – patterns of syntax, semantics, phonology, pragmatics, discourse. It is the patterns that change, the patterns that resemble other patterns. **CONSTRUCTIONS**. My guess is that my examples are not idiosyncratic, marginal examples but important and even not atypical.

The cost of any linguistic theory is the number of theory-internal assumptions which have to be made in order for the theory to work. The benefits are the predictions, insights and (unexpected) connections revealed by the use of that theory – and not available without it. How do costs and benefits stack up against each other? Even if the benefits are thought to outweigh the costs, could one do even better with a different theory? These are important questions. There is a long western tradition of taking word classes as basic to language description, and in the more highly theorised models, as axiomatic. It makes more sense to me to treat distributional word classes as epiphenomena of constructional behaviour. It is the **semantics** at least of the major classes that allows us to track the changes in membership and behaviour of word classes over the years in one language, or across languages.

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