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Morphosyntactic Variation

Anthony Kroch
University of Pennsylvania

1. Introduction.

In a series of recent investigations of language change, a group of researchers at the University of Pennsylvania and elsewhere has described the grammatical character and time course of a number of gradual syntactic changes in various European languages.[1] In all of these cases, the languages undergoing change exhibit variation in areas of grammar where we do not find optionality in stable systems. Thus, Late Middle English, in the course of losing the verb-second constraint, manifests a variation between verb-second and simple SVO word order that is not found elsewhere among V2 languages (Kroch 1989b). Similarly, Old English and Yiddish vary between INFL-final and INFL-medial phrase structure in the course of changing from the former option to the latter categorically (Pintzuk 1991, 1993; Santorini 1989, 1992, 1993). Ancient Greek, in the centuries between the Homeric period and the New Testament, evolves from an SOV language to an SVO one, with extensive variation between the two orders during the long transition period (Taylor 1990, 1992). In early Spanish, clitics vary in their behavior between XP's and X-zero elements; and the language, like Middle French (Adams 1987a, 1987b; Dupuis 1989; Vance 1992), is variably V2 (Fontana 1993). Once again, modern Spanish and French exhibit none of this complexity. Indeed, in no case that we have investigated does the variation associated with syntactic change correspond to a diachronically stable alternation in another language. The discussion to follow is an attempt to explain this fact, extending an argument that we and others have made in the past (see especially Santorini 1992) to the effect that syntactic change proceeds via competition between grammatically incompatible options which substitute for one another in usage.

One source of support for this view of syntactic change is the apparently general validity of the "Constant Rate Hypothesis" (Kroch 1989c), according to which, in all surface linguistic contexts reflecting a given syntactic change, usage frequencies change at the same rate. This constant rate effect, described below, shows that changing rates of usage reflect the gradual replacement of one abstract grammatical option by another and that the process of change itself is governed by a grammatically-defined winner-take-all competition. The question then arises as to why change should proceed in this way. In particular, we would like to know how the grammatical options are defined and why they are mutually exclusive. Here we follow the line of recent work in syntactic theory, which has proposed that syntactic variation among languages is due to cross-linguistic differences in the morpho-syntactic properties of functional heads, among which we include directionality.[2] Syntactic heads, we believe, behave like morphological formatives generally in being subject to the well-known "Blocking Effect" (Aronoff 1976), which excludes morphological doublets, and more generally, it seems, any coexisting formatives that are not functionally differentiated (see Kiparsky 1982b), in a kind of global economy constraint on the storage of linguistic items.[3] Under a morphological conception of syntactic properties, the blocking effect will also exclude variability in the feature content of syntactic heads, as the resultant variant heads would have the status of doublets. This exclusion, however, does not mean, either for morphology or for syntax, that languages never exhibit doublets. Rather it means that doublets

are always reflections of unstable competition between mutually exclusive grammatical options. Even a cursory review of the literature reveals that morphological doublets occur quite frequently, but also that they are diachronically unstable, behaving like the cases of syntactic variation and change that we have analyzed.

2. Grammar Competition in Historical Change.

2.1 The Constant Rate Effect. In our work on syntactic change (Kroch 1989a (1982), 1989c; Pintzuk 1991; Santorini 1993) we have found that linguistic changes which plausibly reflect shifts in basic syntax proceed in a certain well-ordered way. First of all, these changes, at least as reflected in texts, ordinarily proceed gradually, with innovative linguistic forms and word order patterns ousting older ones only slowly over centuries. Secondly, in different linguistic contexts – for example, in main as opposed to subordinate clauses or in questions as opposed to declarative sentences – the innovative form is found at different frequencies. Thirdly, however, and most relevantly for our present discussion, the rate at which the newer option replaces the older one is the same in all contexts. This last fact, our Constant Rate Effect, becomes apparent when we measure the rate of change on the logistic scale, the one ordinarily used to measure frequency differences, especially gene frequency differences in population biology (see Aldrich and Nelson 1984, Spies 1989 and the references cited there).

To illustrate the Constant Rate Effect, let us consider briefly the case of the loss of V(erb)-to-I(NFL) movement in early Modern English, as analyzed in Kroch 1989c, based on an original quantitative study by Ellegård (1953) and the grammatical analysis in Roberts 1985. The basic fact of this case is that Middle English main verbs behave like auxiliaries in three word-order contexts: questions, negative sentences, and sentences with weak adverbs. In each of these contexts, Middle English main verbs give evidence of movement to a functional head above VP (INFL in the terminology of the relevant studies) while modern English main verbs do not. In modern English, the verb instead seems to remain within VP, or at least in a position below the tense and subject-agreement functional head or heads. In questions and negative sentences, where the functional heads need lexical support, the periphrastic auxiliary 'do' appears. With weak adverbs, the verb simply appears after the adverb instead of moving leftward across it. The contrast between modern English and Middle English is illustrated below with examples from Kroch 1989c (examples (18), (19) and (37)):

(1) a. How great and greuous tribulations suffered the Holy Appostels?
    b. How great tribulations did the Holy Apostles suffer?
(2) a. …spoile him of his riches by sondrie fraudes, whiche he perceiueth not.
    b. …which he does not perceive.
(3) a. Quene Ester looked never with swich an eye.
    b. Queen Esther never looked with such an eye.

Tables 1 and 2 give the frequencies of the modern forms in several linguistic contexts from 1400 to 1575, the date at which V-to-I movement is definitively lost:[4]

Dates	Negative Declaratives		Negative Questions		Affirmative Transitive Questions		Affirmative Intransitive Questions		Affirmative *wh-* object Questions	
	% do	N	*% do*	N	*% do*	N	*% do*	N	*% do*	N
1400-1425	0	177	11.7	17	0	3	0	7	0	1
1426-1475	1.2	903	8.0	25	10.7	56	0	86	0	27
1476-1500	4.8	693	11.1	27	13.5	74	0	68	2.0	51
1501-1525	7.8	605	59.0	78	24.2	91	21.1	90	11.3	62
1526-1535	13.7	651	60.7	56	69.2	26	19.7	76	9.5	63
1536-1550	27.9	735	75.0	84	61.5	91	31.9	116	11.0	73
1551-1575	38.0	313	85.4	48	73.7	57	42.3	71	36.0	75

Table 1: Frequency of periphrastic 'do' sentences by context.

never		
Dates	% adverb–V	N
1400-1425	–	0
1426-1475	23.5	154
1476-1500	34.7	186
1501-1525	69.4	109
1526-1535	88.8	170
1536-1550	89.8	152
1551-1575	89.2	88

Table 2: Frequency of 'never'–V word order in sentences with tensed main verbs.

When we perform logistic regressions on these data, by context and with time as the independent variable[5], we find, despite the substantial frequency differences among the contexts at any one point in time and despite the irregular fluctuations characteristic of quantitative data, that the rate of change (that is, the slope parameter of the logistic function) is the same in all contexts. Thus, in the following table the variations in the value of the slope parameter are well within the range expected to arise by chance:

Negative Declaratives		Negative Questions		Affirmative Transitive Questions		Affirmative Intransitive Questions		Affirmative *wh-* object Questions		*never*	
s	k	s	k	s	k	s	k	s	k	s	k
3.74	-8.33	3.45	-5.57	3.62	-6.58	3.77	-8.08	4.01	-9.26	3.76	-5.37

Table 3: Slope (s) and intercept (k) parameter values for logistic regressions of the frequency of non V-to-I sentences against time by context.

This is the Constant Rate Effect that is found repeatedly in empirical investigations. We take its general validity to indicate that what changes in frequency in the course of time during a syntactic change is language users' overall tendency to choose one abstract grammatical option over another in their language production; and it is this changing tendency that produces the changes in the individual surface contexts where usage frequencies can be measured. Note that the underlying option may be

reflected in different surface contexts in different ways, due to interaction with other grammatical factors. Thus, in our illustrative example, we see that the use of the periphrastic auxiliary 'do' patterns with the changing position of weak adverbs relative to the verb. The unity of the change is defined at the level of the grammar, not at the level of the surface contexts. The options in question, moreover, are not alternating realizations within a single grammar, like extraposed versus non-extraposed constituents. Rather they seem always to involve opposed grammatical choices not consistent with the postulation of a single unitary analysis. In the present case, for example, contemporary accounts of verb-movement to INFL all agree that it is forced by the morphosyntactic contents of functional heads and cannot be optional. Because the variants in the syntactic changes we have studied are not susceptible of integration into a single grammatical analysis, the variation does not stabilize and join the ranks of a language's syntactic alternations. Instead, the languages always evolve further in such a way that one or the other variant becomes extinct.

In connection with our discussion of a specific example, it is important to note that the approach taken here implies directly that the frequency differences in different contexts of a change must be due to factors orthogonal to the grammatical change itself (Kroch 1989c), and that these orthogonal factors are responsible for the differences in the intercept parameter values in Table 3. Such factors are not well-understood but must involve psycholinguistic and information processing preferences, which, in usage, favor one form or the other differentially in different linguistic contexts whenever a language, for any reason, happens to allow more than one option for expressing a given linguistic content. In the case at hand, Stein 1986 gives evidence that periphrastic 'do' is favored during the period of transition where its use eliminates complex consonant clusters; and Kroch, Myhill and Pintzuk 1982 and Kroch 1989a give evidence that the use of 'do' is favored to the extent that it simplifies distinguishing subjects from direct objects in parsing. Both effects appear to be real but neither explains why the change underlying the rise of 'do' – loss of V-to-I movement – takes place, a question which we will not address here (see Roberts 1993 and Rohrbacher 1994a for recent discussions). For present purposes, the main point is that such processing effects are orthogonal to the grammatical change. Apparently, they have no effect on its forward progress and they certainly do not cause different linguistic contexts to evolve independently of one another. Hence, the existence of differentiation by linguistic context in the relative frequencies of the competing options during the period of transition does not contradict our claim that, in their temporal evolution, syntactic changes are the working out of competition between grammatical options.

2.2 Excursus on the Theoretical Status of Grammar Competition. We have proposed that variation in the course of syntactic change is between options that are grammatically incompatible and, therefore, that the variation reflects grammar competition. The use of the notion grammar competition in the description of language, however, is sometimes thought to be inadmissible theoretically, a position we think unfounded but which appears to require clarification. The following brief remarks are intended to show that observed languages, as attested by texts or in the usage of speakers (E-language in the terminology of Chomsky 1986), may be thought of as manifesting grammar competition without raising issues of principle.

It is sometimes said that admitting grammar competition into the theory of language will introduce learnability problems; but this objection is based on a

misunderstanding.[6] Since the learner will postulate competing grammars only when languages give evidence of the simultaneous use of incompatible forms, s/he will always have positive and unequivocal evidence of competition. In the absence of such evidence, the learner will simply analyze the language unambiguously in accord with the evidence. The difficulty introduced by the possibility of grammar competition is not for the learner but for the linguist, for whom a methodological question arises; namely, how to know when grammar competition should be invoked and when failure to find a unified analysis means only that more research is needed. Our comment here must be that the existence of this methodological problem does not bear on the issue of whether grammar competition is real. Nothing requires that language be constructed so as to make its investigation easy. Indeed, the same methodological problem raised by grammar competition is induced by notions like "core" versus "periphery" or "I-language" versus "E-language." These notions also imply that the facts of language as we collect them from observation (including judgments of grammaticality) may not be directly susceptible of a unified analysis. Understanding this basic point, of course, does not eliminate the problems the linguist will have in practice in distinguishing grammar competition, peripheral constructions, and E-language effects from the core object of study. Making that distinction will become easier only as more powerful theories are developed which categorize and explain an ever wider range of phenomena. When we reach the point where the linguist has as good a theoretical grasp on Universal Grammar as the language learner has an unconscious one, grammar competition will be as easily recognizable to the former as it already is to the latter.

3. Morphosyntactic Variation.

If we accept that syntactic change proceeds via competition between mutually exclusive grammatical options, we can proceed to the consequent question mentioned in our introduction; namely, the nature of the grammatical options in competition. Here recent proposals to link cross-linguistic variation to a morphological basis, beginning with Borer 1983, are of interest. Under these approaches, most or even all syntactic variability is a reflection of differences in the properties of vocabulary, including both lexical items and grammatical formatives (i.e., functional heads). Indeed, Chomsky (1993) has recently suggested that only such differences are clearly learnable. If we take this view seriously, we are led to the conclusion that syntactic variation should be governed by the same principles as variation in morphology, since the locus of the variability in the two cases is the same – the formative. Just as morphological variants which are not functionally distinguished are disallowed, so we should not expect to find variation between semantically non-distinct syntactic heads. To the extent that such variability is found, it poses the same theoretical problem as the appearance of doublets does in morphology. As we will see, the evidence suggests that this identification of syntactic with morphological variation is correct, not only theoretically but also historically, and that the historical evolution of morphological doublets is similar to that of syntactic variants.

3.1 Morphological Doublets. It is among the most ancient of linguistic insights that morphological paradigms do not admit doublets. In current linguistics this principle is conceived as a blocking effect: The presence of an irregular form in a paradigmatic slot blocks the appearance of the regular form that would have

occupied that slot under the relevant morphological rule. This formulation explains, among other things, why children, who overgeneralize regular morphology in language acquisition, do not vary in their usage between the regular and irregular variants when they eventually learn the latter. Modern theories of morphology accept the no-doublets prohibition as a central one, so that it is interesting to note that doublets are, in fact, reasonably common in the world's languages. On the face of it, the frequent occurrence of doublets might appear to falsify a theory which treats the prohibition as a deep property, and we might be tempted to weaken it to the status of a tendency. However, morphologists have been reluctant to make this concession (e.g., Anderson 1986), and it should be clear why.[7] The no-doublets prohibition is conceived not just as a statement of a generally correct fact about the world's languages but as a theoretical principle which expresses a property of the human language faculty. Languages obey the principle because they must. To restate it as a tendency would be to rob it of explanatory significance; for as a tendency it is no more than a generalization, whose explanation is still to be sought.

How then are we to evaluate a situation where a theoretical principle which seems to bear a significant explanatory burden is systematically confronted with exceptions? One option is, of course, to modify the principle so that the domain which it covers is restricted somehow to a set of cases where it never fails. Here, however, this move is unpromising because the cases of doublets do not differ linguistically in any discernible way from the well-behaved cases. Another move is to search for an additional principle which interacts with the one under challenge to produce the observed pattern. Once again, this move does not seem applicable to the case at hand. Therefore, it appears, we are driven to look for alternatives to the epistemological and ontological assumptions which underlie our statement of the problem. Perhaps we have posed the problem wrongly somehow so that the contradiction with which we seem to be faced is not, in fact, a real one. In this case, just this move seems the most promising. It turns out that in the case of the English past tense (see section 3.2 below), for example, the best explanation for the occurrence of doublets is sociolinguistic: Doublets arise through dialect and language contact and compete in usage until one or the other form wins out. Due to their sociolinguistic origins, the two forms often appear in different registers, styles, or social dialects; but they can only coexist stably in the speech community if they differentiate in meaning, thereby ceasing to be doublets. Speakers learn either one or the other form in the course of basic language acquisition, but not both. Later in life, on exposure to a wider range of language, they may hear and come to recognize the competing form, which for them has the status of a foreign element. They may borrow this foreign form into their own speech and writing for its sociolinguistic value or even just because it is frequent in their language environment. Over time, however, as dialects and registers level out through prolonged contact, the doublets tend to disappear.

It might seem that invoking dialect and register differences to explain theoretically undesirable variation is nothing but a last-ditch maneuver to rescue a failing theory with an unfalsifiable assumption; and so it can be. In this case, however, there are good conceptual reasons to accept the universality of the blocking effect; and once we take the sociolinguistic proposal seriously, we actually find empirical support for it. The fact that the proposal removes embarrassing apparent counter-evidence to a theoretical principle by itself does not invalidate it, though it makes us wary. Indeed, as linguistics deepens its explanatory power, we should expect counter-evidence to turn out to be reconcilable with theory more and more often. Certainly, such reconciliation is characteristic of the more advanced

sciences. In the present case, if we find evidence of the existence of dialect differences underlying the presence of doublets, we may have just such a welcome case of reconciliation between theory and fact in linguistic science.

3.2 The Historical Origin of Doublets: the Case of the English Past Tense. Evidence to support the sociolinguistic origin of doublets in historical contact between dialects has been discovered by Taylor (1994) in recent work on the history of English past tense morphology.[8] Taylor shows that the past tense doublets of English have a very specific history and appear to have resulted from language contact and dialect mixture. Their number is quite large but they do not arise with equal frequency in all dialects of English or at all periods. Rather their appearance peaks in the 13th-15th centuries and seems to be associated with the large-scale borrowing of northern vocabulary and dialect features into written English, which until then exhibited primarily southern forms. The northern dialect, as is well-known, was heavily influenced by the Scandinavian languages. Among other influences, it shows simplifications in inflection characteristic of the wide-spread acquisition of a second language by adults, an effect certainly due to the large-scale immigration of Scandinavian speakers into the North and Northeast of England during the various Danish and Norse invasions of the later Old English period. Taylor argues that while English has – very rarely and sporadically – innovated new irregular, vowel changing (i.e., strong) past tense forms, as in (4) below, most variation in English past tense forms has arisen from the innovation of regular (i.e., weak) alternants for historically strong verbs in the North, as in (5):

(4) a. dived – dove
    b. sneaked – snuck
(5) a. welk – walked
    b. awoke – awaked

Some of the innovations have come down to modern English while in other cases the old strong form has survived. In no cases where variation can be found already in Middle English, however, do both forms survive to the present day, except where they have become differentiated in meaning. Past tense doublets clearly have a limited life span compared to verb forms in general, many of which go back to a time before written records. The average life span of doublets as reflected in citations in the Oxford English Dictionary seems to be about 300 years; but this figure is, of course, misleadingly long, since it reflects citations in any dialect and takes no account of conscious or unconscious archaism.

Innovative weak forms are found predominantly among the less frequent verbs, a fact consistent with current accounts of the acquisition and storage of English past tense morphology, according to which strong verb forms are learned one by one but weak forms are produced by rule (Bybee and Slobin 1982, Kiparsky 1982a, Prasada and Pinker 1993). Taylor believes that under the sociolinguistic conditions in northern England during the late Old English period, substitution of weak for strong forms occurred as part of a general leveling of inflection due to imperfect second language learning by the Scandinavian immigrant population. Naturally, such substitution would have occurred more commonly with less frequent than with more frequent words. She also finds evidence that the creation of new weak forms produced doublets in the language of London, where there was an enormous amount of dialect mixture, but not in the vernacular of the countryside. Thus, she finds robust variation between strong and weak past tense

forms in Chaucer, but not in the letters of the Paston family, local Norfolk gentry. Chaucer's writing, according to the Tatlock and Kennedy concordance (1963), manifests variation with 24 verbs that were strong in Old English; and 7 of these show more than 30% use of the weak form. The Paston letters, on the other hand, despite having been written by several different people over a period of more than 80 years, vary in only three verbs, 'write', 'take', and 'know'; and even with these verbs there are only 4 weak forms in a total of 655 occurrences.

Once English past tense doublets arose through dialect contact, they competed with one another in usage and presumably also in children's language acquisition. Differences in rate of use of the competing forms arose for various historical and stylistic reasons, and even randomly. Over time, these fluctuations led to one of two outcomes: 1) In the absence of further linguistic change, one form eventually disappeared through disuse, just because of stylistic preferences or random statistical fluctuations. Of course, the regular form is always potentially available so that only the frequency of the irregular form was relevant to the historical evolution. 2) The doublet pair became stable due to differentiation in meaning and grammatical properties. Already in Old English, there were pairs of forms, for example 'shined' and 'shone', which coexisted stably because one was transitive/causative while the other was intransitive. Some of the Middle English doublets developed such differences and remain in the language to this day. Thus, for many speakers, the verb 'to fit' has the irregular (though historically weak) past tense 'fit'; but alongside it we find the adjectival passive 'fitted', as in "fitted suit". Some speakers differentiate the two forms further, using the regular form as an agentive verb and the irregular as a stative, as in the following examples:

(6) a. The tailor fitted the suit to my frame.
    b. When I was young, this suit fit me.

Near doublets of this kind continue to arise in the modern language, as one can see in the contrast between the baseball verb 'to fly out', probably denominal in origin, and the original sense of the verb 'to fly':

(7) a. The batter flied out to center field.
    b. The pigeon flew out to center field.

3.3 Functional Equivalence and the Blocking Effect. The stable existence of near doublets and the development of originally doublet forms into near doublets shows exactly what the doublet prohibition is: a constraint against the coexistence of functionally equivalent items. Indeed, the blocking effect extends beyond morphological doublets and prohibits equivalence quite generally in the lexicon. Thus, it is usually taken to be responsible for gaps in the productivity of affixes where irregular forms of equivalent meaning exist. Consider, for example, the commonly cited example of the suffix '-ness', which turns adjectives into nouns. From 'good' it gives 'goodness', from 'happy' 'happiness', and so forth. This suffix is extremely productive, and we would like to say that it can form a noun from any simple adjective. Still, we find many cases where the words formed with '-ness' do not sound natural. Consider the following examples:

(8) clear – ?clearness
(9) bad – ?badness

Apparently, the words '*clearness' and '*badness' cannot be formed because the existence of other forms, with a less regular relationship to the base adjective, block their formation. In the case of 'clearness' the competing form is 'clarity', formed with the exceptional suffix '-ity', which attaches only to words that are marked to allow it. This mark acts just like a marker of irregularity on an inflectional affix and blocks the regular rule. The case of '*badness', however, is more striking. Its formation seems to be blocked by the existence of the morphologically unrelated word 'evil'. Here we cannot treat the blocking effect as simply a property of word formation rules. Rather we must say that it is a global principle of economy that applies to the lexicon and rules out functionally equivalent items. That some such principle is involved is indicated by the fact that 'badness' does exist as a word in at least one domain, the description of the grammatical status of linguistic examples in the colloquial jargon of syntacticians, as in (10):

(10) The badness of the example amazed them.

But in this use it is not in competition with the word 'evil', which always has moral force. In any case, a general blocking principle will be needed to prevent the language learner from postulating pairs of lexical items which differ only in one morphological feature. Otherwise, the blocking effect could be evaded by a learner's postulating two words – for example, two verbs identical in meaning and pronunciation – which differed only in being or not being marked to undergo an irregular derivation or inflection. Such redundancy, if it were allowed, would be an escape hatch in the blocking effect that would lead to the regular and unproblematic postulation of doublets. This point will become important to us later, when we apply the effect to syntactic variants, for, in that case, the variants do not compete for slots in a paradigm. Hence, our analysis will depend on the fact that the effect is not limited to cases of competition within paradigms.

3.4 Irish Analytic/Synthetic Verb Doublets. An important case of morphological variation, with direct implications for syntax, is presented in McCloskey and Hale 1983. In a discussion of the interaction between *pro*-drop and person/number inflection in Irish, they describe the patterning of analytic and synthetic verb forms in the language. The synthetic verb forms are those which carry person and number inflection in addition to tense and mood, while the analytic forms are marked only for tense/mood and not for agreement. The general rule for the use of these forms is that the analytic form appears only where the synthetic form is unavailable; that is, under the following circumstances:

1) where there are gaps in the paradigm of synthetic forms, which happens commonly because synthetic forms never exist for all person/number combinations of a verb. As an example, consider the conditional mood paradigm for the verb 'cuir' "to put" in the Ulster dialect (M&H's (2)), whose analytic form is 'chuirfeadh'. The slots in the paradigm are nearly evenly divided between analytic and synthetic forms, as the following table shows:

Person	Singular	Plural
1st	chuirfinn	chuirfimis
2nd	chuirfeá	chuirfeadh sibh you-pl.
3rd masc.	chuirfeadh sé he	chuirfeadh siad they
3rd fem.	chuirfeadh sí she	chuirfeadh siad they

Table 4: Synthetic and Analytic Forms of 'cuir', "to put," in Ulster Irish.

2) whenever the verb has an overtly expressed subject, including when the local subject is a trace bound by an element in a c-commanding position, as in (11), M&H's (5):

(11) Chan mise-i a chuirfeadh t-i isteach ar an phost sin.
BE+NEG. me COMP put(CONDIT. analytic) in on that job
"It's not me that would apply for that job."

Empty *pro* subjects can only occur when the synthetic form exists and is used. As expected under current accounts of the *pro*-drop phenomenon, the person/number inflection on the verb is needed to license/identify *pro* (McCloskey 1986). Moreover, and somewhat surprisingly, when the synthetic form is used, no overt subject may appear. Of more interest to us, however, is a further fact; namely, that when the synthetic form of a verb exists and a sentence using that verb has a pronoun subject, the synthetic form with *pro* subject must, in general, be used. Thus, we have the following contrast:

(12) * Chuirfeadh mé isteach ar an phost sin.
put(CONDIT. analytic) I in on that job
(13) Chuirfinn *pro* isteach ar an phost sin.
put(CONDIT. 1st sing.) *pro* in on that job
"I would apply for that job."

The same complementary distribution is found with agreeing prepositions that have both analytic and synthetic forms and with possessive noun phrases containing pre-nominal clitics, two additional environments where *pro* is licensed in Irish, as below (McCloskey's (18) and (19)):

(14) liom *pro*
with(1st sing.) *pro*
"with me"
(15) * le mé
with(analytic) me
(16) mo theach *pro*
1st sing. house *pro*
"my house"
(17) * teach mise
house me+EMPH.
"my own house"

M&H propose that the complementary distribution here is an instance of the morphological blocking effect, though they do not discuss how an apparently syntactic phenomenon can be integrated into the morphological domain. What they do say is that there are exceptions to the complementary distribution pattern which produce doublets. The exceptions are, however, limited in number and occur primarily in formal registers and, within those registers, in emphatic responses, as in the following example (M&H's 92):

(18) a. An mbuailfidh tú buille orthu?
Q beat(FUT. analytic) you (a) blow on-3rd pl.
"Will you strike them a blow?"
b. Buailfead.
strike(FUT. 1st sing.)
" I certainly will."

Here the question has the usual analytic form while the emphatic response has the synthetic, which is otherwise not used. McCloskey (1986) says, in addition, that improper analytic forms occur in early child language, and he interprets these uses as morphological overgeneralization on a par with child English 'goed' for 'went' and 'bringed' for 'brought', strengthening the evidence that morphological blocking is responsible for the complementarity in the adult language.

We see in the Irish example the characteristic signature of morphological doublets. The doublet forms are relatively rare; overgeneralization occurs spontaneously in child language but is not retained by adults; doublet forms tend to differ in register so that only one of the forms is native to the contemporary vernacular speech community; and doublets tend to turn into near doublets differentiated in meaning. In all of these regards, the analytic/synthetic verb case is just like the case of the English past tense and provides support for our general characterization of doublets as competing forms. What is special in the Irish example is that the variant forms subject to the blocking effect are relevant to syntax. If, as is now common, we analyze Irish verbal agreement morphology as the content of the functional head Agr-S(ubject), then we must categorize the analytic/synthetic distinction as a difference in the content of that head, which in one variant does and in the other does not license *pro*. Hence, the blocking effect here applies to a syntactic head that hosts verb movement. The two variants of the Agr-S head cannot coexist stably because they differ only in morphosyntactic feature content and not in meaning. The functional differentiation which does occur in an example like (18) takes place in the one semantic domain where verb-associated functional heads do differ in meaning, sentential emphasis. In just this domain modern English uses the periphrastic auxiliary 'do' in affirmative declarative sentences, otherwise not an allowed option. Apparently, this phenomenon in English is also a reflex of the blocking effect.[9]

Since the analytic and synthetic verb forms of Irish are functionally equivalent, one might ask how their coexistence is possible, even in different slots of a paradigm. The answer to this question depends on a proper recognition of the role of morphological form classes in grammar. Since form classes (declensions, conjugations, etc.) are ubiquitous in language and stable, the proper formulation of the blocking effect must respect their occurrence. For instance, the two forms of the English past tense, the weak form that adds '-ed' and the strong one that changes the stem vowel, have coexisted since the proto-Germanic period. Clearly,

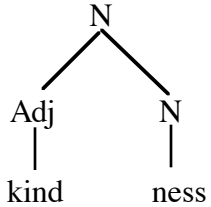
paradigm slots for words can be marked in the lexicon to require different spell-outs of their abstract feature content. Although such alternative marks are not differentiated semantically, they coexist (respecting the "elsewhere" condition) without competition in the language.[10] In the Irish case, the individual slots in the paradigm of each verb carry such marks, which give the shape of their constituent forms. Then, in the syntax, the two variants of the Agr-S head are forced to coexist, despite their functional equivalence, because only one form of the verb is made available by morphology for each person/number combination. In other words, the two Agr-S heads in Irish are functionally equivalent variants potentially in unstable competition, but the competition is not realized. Because Agr-S, in either variant, can be used only where the morphology provides a spelled-out word for insertion into syntactic structure and because the morphology provides only one form for each slot (modulo the doublet case discussed above), only one variant of the head is ever usable in a given syntactic context.

4. The Morphological Character of Syntactic Features.

The issue posed for us by the Irish case is how far a morphological approach can be taken in analyzing language-internal syntactic variation. We believe that the approach should apply generally in all circumstances where the properties of heads determine linguistic behavior. In syntax, these are at least the cases of head movement and of head-complement relations; and the relevant properties comprise the entire feature content of the heads, including directionality specification in whatever way it is marked. For example, when, in historical cases, final and medial INFL heads (more precisely their component functional heads) are found in a single language, the two are to be considered functionally equivalent morphological variants – like English past tense doublets or the variant Irish Agr-S heads. Like the past tense doublets, the directionality variants compete with one another, and one tends to drive the other out of the language. Unlike the Irish Agr-S heads, directionality variants are not linked to different form classes because directionality is not expressible as a phonological shape; that is, as an affix or a stem mutation. Therefore, the kind of stabilization of the variation found in Irish does not occur with directionality variants.

Treating directionality as a morphological property of heads, however, requires further comment. Even linguists who argue for a morphological approach to syntactic variation, have hesitated to apply it to variation in directionality, because that property appears to be general to languages or to whole syntactic classes. We believe, nevertheless, that directionality variation can be treated as morphological. To establish the plausibility of this position, let us consider briefly the behavior of morphological affixes and compare them to syntactic heads. Certain affixes are commonly considered to be the heads of the words in which they appear, partly because they determine grammatical category (Williams 1981, Scalise 1988, among others). Thus, the structure of a word like 'kindness' is as in (19):

(19)



Leaving aside the issue of X-bar level, this structure looks like the head-complement structure in syntax. Other affixes do not determine grammatical category but instead contribute what might broadly be called "aspectual" properties, as for example English particles and prefixes like 'en-' and 'be-', which form verbs from verbs (Olsen 1993):

(20) liven up, fill up, stretch out, spatter up, darken up
(21) enliven, embolden, enlarge, bespatter, bedarken

Without entering into details, it seems reasonable to think of these affixes as similar to the functional heads in syntax that contribute tense and aspect features to verbs while not changing their grammatical category. In any case, just as syntactic heads obey a directionality requirement, so morphological affixes are either prefixal or suffixal. Hence, it seems reasonable to treat directionality as a morphological property of syntactic heads on a par with the direction of attachment of affixes.[11]

If directionality is a property of syntactic heads, we should find variation in directionality as we go from head to head and not just as we go from language to language; and this is, in fact, what occurs. In languages like German and Dutch, for example, COMP is head-initial while INFL is head-final. More strikingly, perhaps, Hindi (and related languages of the Indian subcontinent) appear to have complementizers that differ among themselves in directionality.[12] Thus, consider the following Hindi examples:

(22) Hari-ne Sita Ramesh-ko jaantii hai aisa kaha.
Hari-erg Sita Ramesh-acc know is that said
"Hari said that Sita knows Ramesh."
(23) Hari-ne kaha ki Sita Ramesh-ko jaantii hai.
Hari-erg said that Sita Ramesh-acc know is
"Hari said that Sita knows Ramesh."

Hindi is a broadly head-final language; and the native word 'aisa' functions, among other things, as a sentence final complementizer for tensed clauses, as illustrated in (22). Along with its sister languages, however, Hindi has borrowed the sentence-initial complementizer 'ki' from Persian; and when this complementizer was borrowed it preserved its sentence-initial position, as illustrated in (23). In addition, 'ki' and 'aisa' differ in their position relative to the matrix predicate, apparently because 'ki' clauses are obligatorily extraposed like German tensed 'daß' clauses, a fact which we will treat as outside our present concerns. In any case, the fact that the directionality properties of 'ki' were preserved when it was borrowed indicates that directionality is a property of the complementizer itself rather than of the language as a whole. If this is the case for Hindi 'ki', it seems reasonable to suppose that directionality generally is a morphosyntactic property of individual heads.

Another sort of head-dependent syntactic variation is the variation that English exhibits in the head positions that verbs may appear in. Thus, the auxiliaries – 'have', 'be', and the modals – plausibly each a distinct morphosyntactic category, exhibit verb-raising to INFL under different conditions, while main verbs, the default category, do so only at L(ogical) F(orm). These differences among the various classes of English verb seem quite parallel to the differences in the level of lexical structure at which different morphological affixes attach. Also

interesting from our perspective are the remnant verb-second effects left in English. As is well-known, preposed *wh-* words, negative constituents, and the linking adverb 'so' trigger fronting of the tensed verb to COMP, while other topicalization contexts do not. Compare (24) and (25) below:

(24) a. Who have you visited?
b. Not a single prisoner will they spare.
c. Sarah works hard and so does Bill.
(25) a. Mary, I have visited.
b. Some prisoners, they will spare.
c. Often, she works hard.

It seems at first odd that a general syntactic process like the verb-second constraint should be subject to variation according to the character of the preposed constituent; but it turns out that the environments which trigger inversion in modern English are closely related to those that forced verb movement to COMP, as opposed to INFL, in Old and Middle English (Pintzuk 1991). The difference between the two landing sites of movement in the earlier languages was linked to differences in sentential aspect and mood and so apparently to differences in the morphosyntactic feature content of the COMP and INFL heads.[13] In the course of history, INFL lost the feature content driving verb-movement to it but COMP did not. Thus, we find in the modern language that verb-movement to COMP persists. We might ask ourselves why the presence of a triggering element always results in V-to-C movement; that is, why subject-auxiliary inversion in English questions, for example, is not optional. There must be a selectional relationship between the triggers and the morphosyntactic features in COMP that drive verb movement. This relationship once again looks like what we find in morphology, where certain lexical items require marked affixes, while others take a default affix, as in the case of the noun-forming suffixes '-ity' and '-ness' discussed above. As always, the blocking effect prevents the appearance of doublets. If we consider the morpho-syntactic features in COMP that drive verb movement to be selected by the triggers in (24) – that is, to be lexically restricted in the way that '-ity' is – and to be subject to the blocking effect like a morphological affix, both the restricted set of contexts for V-to-C movement and its obligatory character in those contexts receive natural explanations.

5. The Directionality of Lexical Heads.

The examples of varying directionality associated with different syntactic heads mentioned above are limited in number. They are also limited in type; in particular, there do not seem to be cases where the major category lexical heads – verbs and nouns – vary in the their directionality with respect to complements. Why, we must ask, should these restrictions on frequency and type exist? The limited number of cases of directionality variation, we believe, may not have a solely grammatical explanation. The work of Hawkins (1979, 1983, 1990) suggests that there is a statistically manifested historical pressure toward cross-category harmony in word order, so that, for example, languages which become prepositional as opposed to postpositional tend also to adopt verb–complement word order. This tendency, by itself, will lead heads generally to share directionality; and cases where they do not will be expected to be rare. Another element in the explanation of the rarity of directionality variation may be that in each

language, the directionality of each syntactic category has a default setting. Just as the English past tense morpheme has a default shape, which appears unless a verb is marked to take another past tense form, so the individual heads belonging to a given syntactic category will take a default directionality unless they are marked otherwise. Then we will expect the default directionality to predominate and to be subject even more strongly than *cross*-category harmony to a Hawkins-type statistical effect in the historical evolution of languages.

A bigger issue for us than the rarity of directionality variation is its absence with verbs and nouns. If directionality is a property of formatives, we might expect to find exceptional verbs and nouns that differ in directionality just as we can find exceptional functional heads that do so; but we do not. We do find such cases with other lexical categories, most obviously with adpositions; but these have also been analyzed as functional heads, a point to which we return below.[14] The existence of adposition variability in directionality is well attested. For example, although German is a largely prepositional language, a few German adpositions, notably 'entlang', meaning "along," and 'wegen', meaning "on account of," are actually postpositional, as in:

(26) a. den Fluß entlang
the river along
b. des Kindes wegen
the child on account of

The case of 'wegen', moreover, is interesting because its order with respect to its complement is variable. In the colloquial language the word is an ordinary preposition while it is a postposition in certain elevated styles. The postpositional order is clearly archaic and seems to be on its way to being lost, just as we would expect. French also has an adposition, 'durant', which can be either prepositional or postpositional; and here, in addition to differing in register, the two forms differ in meaning. When prepositional, 'durant' is perfectly colloquial and means "at some time during." When postpositional, it occurs only in the written language and means "throughout," as illustrated in the following sentence pair:[15]

(27) Il a travaillé durant l'année.
He has worked during the year
"He worked at some (unspecified) times during the year."
(28) Il a travaillé l'année durant.
He has worked the year throughout
"He worked throughout the year."

A more extensive case of directionality variation with adpositions is found in Dutch, which has both prepositions and postpositions.[16] In addition, a number of Dutch adpositions may be either prepositional or postpositional, with, however, a consistent difference in meaning. The prepositions are generally locative, while the postpositions are always directional. The examples below illustrate this behavior:

(29) a. Ik fiets in de straat.
I bike in the street
(locative only – my bike riding takes place in the street)

b. Ik fiets de straat in.
I bike the street into
(directional only – my bike riding takes me into the street)

If an adposition does not allow a directional interpretation, the postpositional option is not available, as the following contrast illustrates:

(30) a. Ik zwem bij de grote pier.
I swim near/at the big pier
b. * Ik zwem de grote pier bij.
I swim the big pier near/at

Adpositions with only directional interpretations, on the other hand, may be prepositional or postpositional, but not both, as illustrated below:[17]

(31) a. Ik loop naar de boom.
I walk to the tree
b. * Ik loop de boom naar.
I walk the tree to
(32) a. * Ik loop tegemoet de gasten.
I walk towards the guests
b. Ik loop de gasten tegemoet.
I walk the guests towards

Thus, Dutch adpositions exhibit just the sort of variation in directionality that our analysis predicts, including a robust association of near-doublet directionality variants of individual adpositions with meaning differences.[18]

Given the existence of variable directionality with adpositions, we clearly need an explanation for the absence of variation with verbs and nouns; but one is available that is consistent with our general thesis: Suppose that verbs and nouns differ from adpositions in never, on the surface, appearing in their underlying head position but always moving to a functional head higher up in the structure. If this claim can be maintained, the surface position of verbs and nouns will always reflect that of the functional heads to which they move rather than their base positions; and since these functional heads are single formatives, they will always have the same position relative to the other elements of the sentence. Then, the variability we find with adpositions is in need of explanation, since they might also be expected to move to a functional head. As we have noted, however, adpositions are often considered to be functional categories; and if they are, their variability in directionality is expected. It is beyond the scope of this paper to defend in any detail the hypothesis of obligatory head movement of lexical categories, a task that we must leave to future research. It is worth pointing out, however, that for verbs, the position we have outlined is exactly the one proposed in Johnson 1991. He argues that all English verbs move to a functional head below Tense, which he calls μ, giving analyses of particle verbs and of double object verbs that depend on this movement. To the extent that Johnson's analysis or one like it is well-motivated for verbs and can be extended to nouns, the absence of directionality variation in these categories will turn out to be consistent with the highly morphological approach to syntactic variation that we have defended.

6. Conclusion.

We have seen that the historical evolution of competing variants in syntactic change is similar to the evolution of morphological doublets. In both cases, the coexistence of the variant forms is diachronically unstable: One form tends to drive the other out of use and so out of the language. The parallelism between the cases receives a natural explanation if we treat syntactic heads as formatives which, like lexical items, are subject to the blocking effect, the principle that militates against the co-presence in a language's vocabulary of items that do not differ in meaning. The blocking effect, as we have seen, does not prevent doublets from arising in a language by sociolinguistic means; that is, by dialect and language contact and perhaps other processes. Instead, the effect appears to be a global economy constraint on the storage of formatives, which resists addition to the lexicon of forms equivalent to ones already learned. This effect may be inviolable in primary language acquisition by young children; but it can clearly be overridden as speakers learn a wider range of styles and social dialects in the course of maturation. Nevertheless, over long periods of time, the constant pressure of economy on acquisition seems to win out over sociolinguistic variation in the history of doublet forms. The one mechanism that preserves doublets for indefinite periods is meaning differentiation, which is effective because it removes the doublet pair from the domain of the blocking effect. In this regard, the history of syntactic variants is simpler than that of lexical doublets because, in comparison to the latter, the former are less open to meaning differentiation, expressing as they do purely configurational differences in the location of features like tense and finiteness, agreement, case, and predication, features which themselves are universal and fixed in content.[19]

Notes

1. I would like to thank Richard Kayne, Paul Kiparsky, William Labov, Susan Pintzuk, Donald Ringe, David Sankoff, Beatrice Santorini and Ann Taylor for helpful discussions at various times of the issues raised here. I also want to express my appreciation to audiences at the Chicago Linguistics Society, the University of Edinburgh, and the Université de Paris 7 for their helpful comments on various versions of this paper. Also, several of the examples used in course of the discussion were suggested to me by fellow linguists in conversation. They are cited when these examples are introduced.

2. We will not adopt the position of Kayne 1993, according to which heads are invariably initial and head-final order is derived by movement. We believe, however, that our proposals can be translated into his terms quite directly if that proves desirable. The translation will involve mutating the directionality feature into whatever feature triggers obligatory leftward movement of the head's complements and adjuncts, say "strong" as opposed to "weak" N features in the terminology of Chomsky 1993. See, moreover, Rohrbacher 1994b for certain difficulties raised by Kayne's proposal.

3. The existence of such an economy constraint poses a question for psychological models of the brain's storage mechanism for formatives. The mechanism must be such as to support and induce the required optimization.

4. See Kroch 1989c and Roberts 1993 for discussion of the residual cases of Middle English word order that remain after that date.

5. The only weak adverb whose position we have studied is 'never' because Ellegård collected data only for that case. Furthermore, the data for 'never' must be corrected by a small but constant percentage to account for the cases where the adverb appears in a pre-INFL position, as in a modern English sentence like:

(i) Mary never has wanted to leave her friends.

See Kroch 1989c for a fuller discussion.

6. Another issue with regard to grammar competition, which we will not discuss here, is its sociolinguistic locus. Since the cases of grammar competition we have studied are all historical cases based on written texts, it is perfectly possible that it reflects stylistic options limited to the written language, with its known peculiarities and tendencies to linguistic unnaturalness. Thus, we might see in historical contexts competition between the grammar of the spoken language of a given time and an archaic but still influential literary standard. If this is so, then grammar competition will have no purely linguistic significance, but will still be important in the interpretation of texts. Only work on possible cases of competition in living languages can determine whether it exists in unreflecting vernacular speech, a question to which we do not yet know the answer.

7. See, however, Stump 1989 for a contrary view.

8. See Zwicky and Pullum 1983 for another such a case in Somali, where certain plural nouns may co-occur with either plural or feminine singular morphology on the verb. This pattern is apparently due to borrowing from Koranic Arabic. The authors note but do not discuss the fact that this optionality is a counterexample to the blocking effect. The facts as presented are not rich enough allow us to analyze the case further.

9. The blocking effect may also be responsible for the fact that Irish does not permit overt subjects to occur with the synthetic verb form. Further analysis would be required, however, to work out this possibility in detail and to evaluate it.

10. Similar marks control the attachment of derivational affixes of different shapes with the same meaning, as in the case of '-ity' versus '-ness' discussed above.

11. Of course, affixes do not vary in directionality in the same way as syntactic heads. Thus, the right-hand head rule in morphology limits grammatical category changing affixes to suffixes (Williams 1981). A theory relating directionality variation in syntax and morphology remains to be constructed.

12. I thank Joan Bresnan for pointing me toward this case. Thanks also to Aravind Joshi and Rajeesh Bhatt, who have discussed the facts with me and provided the examples. They have pointed out that both 'ki' and 'aisa' are actually quite difficult to analyze, and the simple treatment I give here may not be adequate. However, it seems that neither the directionality difference between the two words nor their status as functional elements is likely to change under further scrutiny.

13. Similar mood related V-to-C movement occurs in the protases of conditionals when the complementizer position is empty:

(i) Had I known, I would have come earlier.
(ii) If I had known, I would have come earlier.

14. Adjectives may also exhibit relevant idiosyncratic syntactic properties, for example with respect to pre- versus post-nominal placement in languages like French and their appearance in attributive versus predicative position in English.

15. Thanks to Christiane Marchello-Nizia for this example.

16. Thanks are due to Laura Joosten for pointing these cases out to me and providing me with examples. We should note that a Dutch postposition ordinarily must incorporate with the verb that governs it; and when it does so, it looks like a separable prefix. However, incorporation appears to be blocked when the postposition receives stress, as in the following example, where the postpositional phrase has been topicalized:

(i) De garage in wil ik rijden maar de garage uit niet.
the garage into want I to ride but the garage out not

Sometimes there is a difference of word order and scope tied to the application or non-application of incorporation, as in:

(ii) a. …dat ik de stadt niet in rijd.
that I the city not into ride
"that I don't ride to the city."
b. …dat ik de stadt in niet rijd (maar fiets).
that I the city into not ride but bicycle
"that I don't ride (but instead bicycle) into the city."

Here again there is some stress on the postposition in the unincorporated case. It seems likely that the incorporation possibility is what has prevented the reanalysis of these postpositions as prepositions over time. We thank Jacqueline Guéron for emphasizing to us the importance of the incorporation process in this case.

17. There are also circumpositions, not of direct interest to us here, as in:

(i) Ik loop naar de gasten toe.
I walk up the guests to

18. As in other such cases, however, the complementarity of meaning found with the variable adpositions is not absolute. The prepositional order sometimes allows both directional and locative interpretations, as in the following examples:

(i) a. Ik klim in de boom.
I climb in/into the tree
b. Ik klim de boom in.
I climb the tree into

(ii) a. Ik spring op de tafel.
I jump on/onto the table.
b. Ik spring de tafel op.
I jump the table onto

Here the postposition/preposition alternation is similar to the difference between simple and compound prepositions like 'in' and 'into' or 'on' and 'onto' in colloquial English, where the simple preposition may be either locative or directional while the complex one is always directional. This partial overlap in meaning seems characteristic of near doublets in language. It remains to be determined how much overlap in meaning is consistent with the stable coexistence of near doublets and under what circumstances they are actually in competition and tend to drive one another out of the language.

19. Nevertheless, phenomena like split ergativity may reflect just such meaning differentiation between syntactic formatives. Thanks to Caroline Heycock for this observation.

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