Variation and the Minimalist Program[*]

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1. *Introduction*

Granting the presence of widespread structured variation in the use of language (e.g. Labov 1972a), the following question arises for theoretical linguistics: how is the mental grammar (the I-language of Chomsky 1986) organized so that such variation arises?

There have been a number of kinds of answers to this question. An early response within the variationist paradigm was to posit variable rules (e.g. Labov 1972b, Cedergren and Sankoff 1974), where probabilities are built into the definition of the grammatical rules themselves. Other approaches involve positing multiple grammars, or the idea that multiple parametric settings are available to speakers (see Bender 2001, Henry 1995, Kroch, 1989a, 1989b, for different approaches)

In this paper, we argue that the architecture of the Minimalist Program (Chomsky 1995, 2000) is particularly well suited to dealing with grammatical variability, because of the way that it manipulates grammatical features, essentially allowing variable phonological outputs with the same semantic interpretation. We illustrate this approach via two case studies from a Scottish dialect (Smith 2000).

2. *The framework*

The framework of the Minimalist Program (Chomsky 1995; Chomsky 2000; Chomsky 2001) proposes that knowledge of language can be captured as a function from sets of lexical items to meaning-sound pairs. This function is defined by a small number of very general syntactic operations. The syntactic operations themselves are uniform across the species, with all cross-linguistic variability being confined to the specification of lexical items. Lexical items themselves are considered to be just collections of features: morpho-phonological, semantic and syntactic. The framework assumes that syntactic features come in two sorts: those with a semantic interpretation (such as the feature [past]), and those with a purely syntactic function (for example, nominative case on a nominal, or agreement marking on a verb). The former features are called **interpretable**, while the latter are **uninterpretable**. The way that uninterpretable features capture syntactic

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dependencies is that they have the following property: an uninterpretable feature must be **checked** by a matching feature (whether interpretable or not). This means that every syntactic dependency will be triggered by the presence of an uninterpretable feature.

We will follow the implementation of Minimalism developed in Adger (2003), for concreteness. In this implementation, features are assumed to generally have the form [Feature:Value] (e.g. [case: nominative]). Uninterpretable features on lexical items may lack a value (e.g. we notate uninterpretable features by prefixing them with a *u,* following Pesetskey and Torrego (2001), so, for example, the lexical entry for a noun might just have the specification [*u*case:]). Such lexical items receive their value during the syntactic derivation. This happens when they check with a matching feature which does have a value. Schematically: a structure containing [F:a] … [*u*F:] becomes one which contains [F:a] … [*u*F:a].

Once an uninterpretable feature is checked, it deletes. We notate this with a strikethrough, again following Pesetsky and Torrego's notation, so, refining what we saw immediately above, we have a structure containing [F:a] … [*u*F:] becoming one containing [F:a] … [~~*u*F~~:a].

The result of this system is that the final representation delivered to the semantic component consists only of interpretable features; all uninterpretable feature have been deleted.[1]

To see how this works in a concrete case, take a sentence like (1), where the subject bears two features: [number:plural], an interpretable feature which we abbreviate as [num:pl], and [*u*case:nominative], an uninterpretable one, which we abbreviate as [*u*case:nom].

(1) They bark.

We assume that the whole sentence is headed by an syntactic element T, which in this case bears an interpretable present tense feature [tense:pres], and two different uninterpretable features: [*u*case:nom] and [*u*num:pl]. This specification captures the fact that nominative case in English is syntactically dependent on finite T and also the fact that English verbs agree in number (we ignore First Person Singular agreement with the present form of *be* in English, here. See section 5 for discussion); Following much work on English verbal morphology (see, for example, Chomsky 1957, Lasnik 1981, Bobaljik 1995) we assume that the morphology on the main verb arises because a morphological operation has spelled out the tense and number features of T as a verbal suffix.[2]

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[1] We use the mechanisms of uninterpretable features, valuation and deletion here, but we are not committed to this implementation. See Chomsky (2002) for a system which reduces uninterpretability to valuation, and Adger and Ramchand (to appear) for a system which further removes the need for a deletion operation.

[2] There are alternative methods of dealing with the spellout of the inflectional features on V in English, some purely syntactic, some as interface rules operating between syntactic and morphological structures (see Adger 2003 for an example of the former approach);

The system relates the sound pattern of the orthographical representation in (1) to its meaning by means of a syntactic derivation like that in (2).

(2) a. Select relevant lexical items[3]: {**pronoun**[num:pl, *u*case:], **bark**[V], T(ense)[tense:pres, *u*case:nom, *u*num:]}. Note that the case feature on the noun is unvalued, as is the number feature on T.

b. Group together **pronoun** and **bark**, creating a VP constituent. The grouping operation is called **Merge**.

c. Merge Tense with VP creating a T(ense) P(hrase):

TP

T[tense:pres, *u*case:nom, *u*num:] VP

pronoun[num:pl, *u*case:] **bark**

d. Set up a checking relation between T and **pronoun** in the new structure, which checks and values the uninterpretable case and number features on both. This checking relation is usually called **Agree**. Since both case features are uninterpretable, both are marked with a strikethrough. Since, of the two plural features in the representation, only [*u*num:] on T is uninterpretable, only it is marked with a strikethrough:

TP

T[tense:pres, ~~*u*case~~:nom, ~~*u*num~~:pl] VP

pronoun[num:pl, ~~*u*case~~:nom] **bark**

e. Move the pronoun into the specifier of Tense Phrase, leaving a copy in the original position, notated here with angled brackets (we ignore the motivation for this movement here, see Chomsky 1995). This operation is called **Move**.

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we adopt something close to the standard here for simplicity and familiarity. We have glossed over a number of questions about whether there is a more articulated structure above the VP (see, for example, Pollock 1989 and much subsequent work), within the VP (see, for example, Larson 1987, Hale and Keyser 1993, among many others), and have assumed a very simple analysis of case checking. None of these simplifications affect the material point.

[3] These lexical items are simplified. We follow Distributed Morphology (Halle and Marantz 1993) in assuming that they lack any phonological information: they are just bundles of syntactic and semantic features which are spelled out as morphemes at some point in the derivation.

TP

pronoun[num:pl, ~~*u*case~~:nom] T’

T[tense:pres, ~~*u*case~~:nom, ~~*u*num~~:pl] VP

<**pronoun**[num:pl, ~~*u*case~~:nom]> [**bark**]

f. Associate morphemes with these feature bundles. For example, the morpheme **they** will be the spellout of **pronoun**[num:pl, ~~*u*case~~:nom], whereas, if this lexical item had had its case feature valued as [accusative], the appropriate spellout would have been **them**. The copy of the pronoun is not pronounced.

TP

they T’

0[+affix] VP
bark

g. Perform whatever morphological operations are triggered by the featural properties of lexical items. The most important one here is the rule that realises the inflectional features on T as a suffix on V. This rule is a morphological adjustment rule, rather than a syntactic movement rule (we show it on a tree structure here for simplicity as leaving behind an empty category notated e; we are not committed to this operation being a tree-theoretic rather than a string theoretic operation. See Embick and Noyer 2002, Bobaljik 1995 for discussion):

TP

they T’

e VP

bark+0[+affix]

h. Perform phonological operations to derive the surface phonetic representation of (1).

Although the penultimate step makes no difference to the phonological output in this particular case, if the featural specification of T had been singular or past, T on V would have been spelled out as the (appropriate allomorphs of the) –s or –d morphemes.

This derivation maps from an initial selection of lexical items to the final output using three syntactic operations (Merge, Agree and Move) and a set of syntax/phonology

interface rules (usually called the **Spellout** component), which insert morphemes for feature bundles and may effect some reordering.

Notice that the representation which serves as input for the insertion of morphemes consists of two types of features: semantically interpretable features and checked uninterpretable features. Both types of feature can affect the phonological form, but only the first can affect the meaning. Within the spellout component itself, we have another kind of feature which can affect phonological form (in this case, [+affix]). Since this feature is outside the syntax proper, it also cannot affect semantic interpretation.

The essential intuition that we will pursue in this paper is that variation arises from lexical items having, by the end of the syntactic derivation, the same interpretable feature specification coupled with different uninterpretable and phonological specifications. We will look at two particular cases: where lexical items bear the same interpretable but different uninterpretable features, and where inserted morphemes trigger different morphophonological processes. Both cases localize variability in the output within properties of lexical elements (feature bundles, or morphemes).

Particularly interesting challenges for this model arise in cases where we find the same features being involved in both variable and categorical patterns, and we will argue that this is a result of lexical items essentially underspecifying their syntactic requirements. We make the argument through an analysis of a number of morpho-syntactic variables in a corpus of vernacular Scots, detailed below.

3. *Morphosyntactic Variation in Buckie*

Buckie is a small fishing town situated on the coast 60 miles north of Aberdeen in Scotland, shown in Figure 1.

It is quite isolated in both geographic and economic terms and therefore remains relatively immune to more mainstream developments. As with similarly isolated communities (e.g Schilling-Estes & Wolfram 1994, Poplack & Tagliamonte 1991), this is reflected in the linguistic behaviour of the community (Smith 2000). The data were collected using standard sociolinguistic methodology (Labov, 1984) and is highly vernacular in nature. The data amounts to approximately forty hours of tape-recorded casual conversations which have been fully transcribed and consists of over 300,000 words. The speakers in the sample were born and raised in the community, and indeed the majority come from families who have been in the town for generations. They are working class and exhibit networks that were generally confined to the community in question. The speaker sample is shown in Table 1 (see further Smith, 2000).

Figure 1: Map showing location of Buckie.

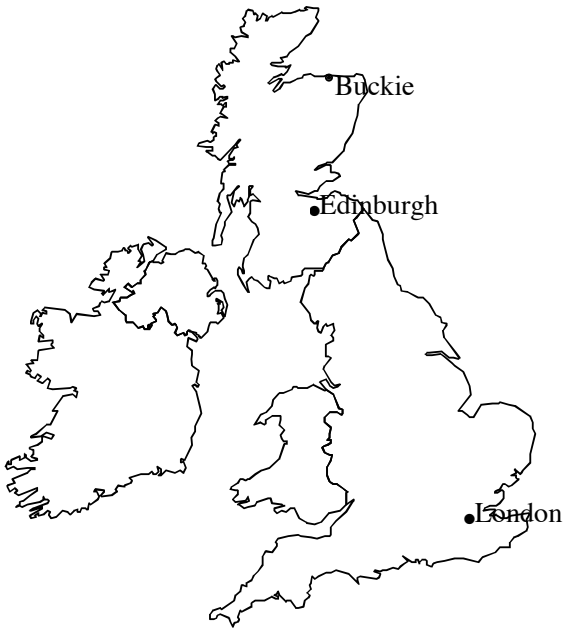


Table 1: Speaker sample

age range	male	female
22-31	8	8
50-60	7	7
80+	4	5

A large number of non-standard morpho-syntactic variables exist in the dialect alongside their standard counterparts. In this paper, we concentrate on just two: *was/were* alternation, as in (3), and *do* absence in negative declaratives, as in (4)[4]:

(3) a. He says 'I thocht you ***were*** a diver or somethin'.' (7:262.41)[5]
He said 'I thought you were a diver or something.'
b. 'Aye, I thocht you ***was*** a scuba diver.' (7:259.21)
'Yes, I thought you were a scuba diver.'

(4) a. She's in the huff if I ***dinna*** let her. (g:659.13)
She's in a bad mood of I don't allow her.

[4] See Adger and Smith (2002) for an application of the ideas discussed here to the structure and use of negative concord in the same speech community.
[5] Codes represent speaker and place in the transcription.

b. God, I ø ***na*** ken far my ain face is here. (a:654.18)
God, I don't know where my own face is here.

However, the mere presence of non-standard forms tells us little about their distribution of use across community and linguistic structure. Beginning with Labov in the 1960s (e.g. Labov 1966a), the variationist paradigm has demonstrated correlations between internal linguistic and external social factors in accounting for the observed variability. We now turn to a quantitative analysis of the data in order to establish 'why, where and when it was used, as well as by whom' (Poplack 1993:252).

3.1 ***Was/were*** *alternation*

We begin with *was/were* variation, as in (3), which is not only one of the most common features of vernacular dialects worldwide (e.g Chambers 1995), but it also the most widely-studied (e.g Cheshire 1982, Cornips & Corrigan 2002).

Table 2 shows that in the Buckie sample, *was* appears in contexts of standard *were* 54% of the time. Moreover, this percentage of the product of *intra-speaker* variability: of the 39 speakers in the sample, all showed variable use.

Table 2: Overall distribution of *was/were* alternation

were	*was*	Total
46	**54**	1313

In many dialects, there is widespread use of *was* in all contexts where standard English uses *were*, i.e. with subjects which are: 2nd person singular and plural (*you*), 1st person plural (*we*), 3rd person plural (*they*), plural NPs and existential constructions with *there* and a post-copular plural NP (e.g. Cheshire 1982). This has been claimed to be the result of analogy with other verbs that show no singular/plural distinction (Feagin 1979) or that *was* in *were* is a primitive of vernacular dialects (Chambers 1995:242).

However, when the Buckie data are divided by grammatical person, as in (5-9), a distinct pattern emerges: variable use in all contexts except with the pronoun *they*. The results are shown in Table 3.

2nd person singular pronoun *you*

(5) a. He says 'I thocht ***you were*** a diver or somethin'.' (7:262.41)
He said 'I thought you were a diver or something.'
b 'Aye, I thocht ***you was*** a scuba diver.' (7:259.21)
'Yes, I thought you were a scuba diver.

1st person plural pronoun *we*

(6) a There was one nicht ***we were*** lyin' at anchor. (g:875.32)
There was one night we were lying at anchor.

b We played on 'at beach 'til ***we was*** tired, sailin' boaties, bilin' whelks…(b:254.15)
We played on that beach until we were tired, sailing boats, boiling whelks.

3rd person plural pronoun *they*

(7) a ***They were*** aie sort o' pickin' on me, like. (j:504.3)
They were always sort of picking on me.
b ***They were*** still like partying hard. (j:635.28)
They were still partying hard.

3rd person plural Full NP

(8) a Buckie ***boats were*** a' bonny graint. (g:1066.0)
Buckie boats were all nicely grained.
b The ***mothers was*** roaring at ye comin' in. (b:256.34)
The mothers were shouting at you to come in.

plural existential *there*

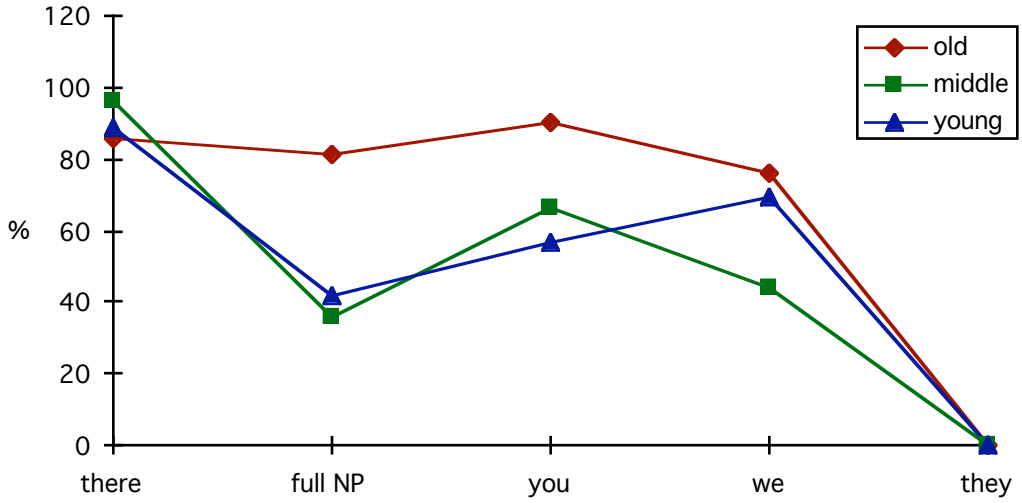
(9) a ***There were*** a puckle thatched houses like that. (c:335.17)
There were a couple of thatched houses like that.
b Oh, ***there was*** a lot of coopers 'at time. (c:13.45)
There were a lot of barrel makers at that time.

Table 3: Distribution of *was* in *were* by grammatical person

	%	N
2nd singular *you*	**69**	161
1st plural *we*	**67**	368
3rd plural pronoun *they*	**0**	435
Existential *there*	**90**	162
NP plural	**56**	187

When the speaker data are divided by age, there is a slight decrease in use of the non-standard form across all variable contexts from old to young, as in Figure 2.

Figure 2: Distribution of *was* in *were* by grammatical person and age



This suggests that prescriptive norms may have an impact on this variable, but the categorical versus variable distinction remains.[6]

This pattern is, in fact, consistent with the historical record for northern dialects (e.g. Murray 1873), where an NP/pronoun distinction exists in 3rd person plural contexts: *were* is used with pronominal *they* but *was* with full NPs. This is in contrast to other dialects, which tend to show variable use across all grammatical persons (e.g. Cheshire 1982), thus cannot in this case be the result of 'primitive tendencies' nor analogical change as previously proposed. We return to this categorical vs. variable use in the Buckie dialect in Section 5.

3.2 ***Do*** *absence in negative declaratives*

The second variable under investigation is *do* absence, as in (4). In contrast to *was/were* alternation, this variable is not in widespread use in other varieties, and in fact appears to be restricted to rural areas on the north east coast of Scotland. Moreover, the variable context is highly circumscribed in the Buckie dialect—*do* absence only occurs in negative declarative sentences in the simple present tense. Thus, past tense negatives are always marked with *did.* However, it is similar to *was/were* alternation in that (i) all speakers exhibit variable use, and (ii) grammatical person, as in (10-16) plays a major role in governing the variability.

[6] A number of other constraints were tested in the data, including polarity and copula vs. auxiliary status of the verb. However, none of these were significant for the use of non-standard *was*.

1st person singular *I*

(10) a. She's in the huff if ***I dinna*** let her. (g:659.13)
She's in a bad mood if I don't allow her.
b. God, ***I ø na*** ken far my ain face is here. (a:654.18)
God, I don't know where my own face is here.

2nd person singular *you*

(11) a. ***Ye dinna*** think ye'll be drunk. (n:349.56)
You don't think you'll be drunk.
b. ***Ye ø na*** hear o' him onywye, ken. (u:54.86)
You don't hear of him anywhere, you know.

3rd person singular *he/she/it*

(12) a. ***He disna*** get word fae the loon. (c:526.19)
He doesn't hear any news from the boy.
b. ***It disna*** cost nothin' to walk ower the hill. (l:604.21)
It doesn't cost anything to walk over the hill.

3rd person singular *full NP*

(13) a. No, ***Willy disna*** play much golf. (@:455.56)
No, Willy doesn't play much golf.
b. ***The car disna*** ging in the garage. (x:58.0)
The car doesn't go in the garage.

1st person plural ***we***

(14) a. ***We dinna*** really socialise that much. (k:329.53)
We don't really socialise that much.
b. ***We ø na*** hae raffles. (*:32.30)
We don't have raffles.

3rd person plural *they*

(15) a. ***They dinna*** gie them great pay, like. (4:493.26)
They don't give them good pay.
b. ***They ø na*** lose trade. (*:44.32)
They don't lose trade.

3rd person plural *full NP*

(16) a. ***Bairns dinna*** coont. (u:492.20)
Children don't count.
b. ***A lot of families disna*** get what that cats get. (e:478.28***)***
A lot of families don't get what that cat gets.

Table 4 shows the distribution of *do* absence when the data are divided in this way.

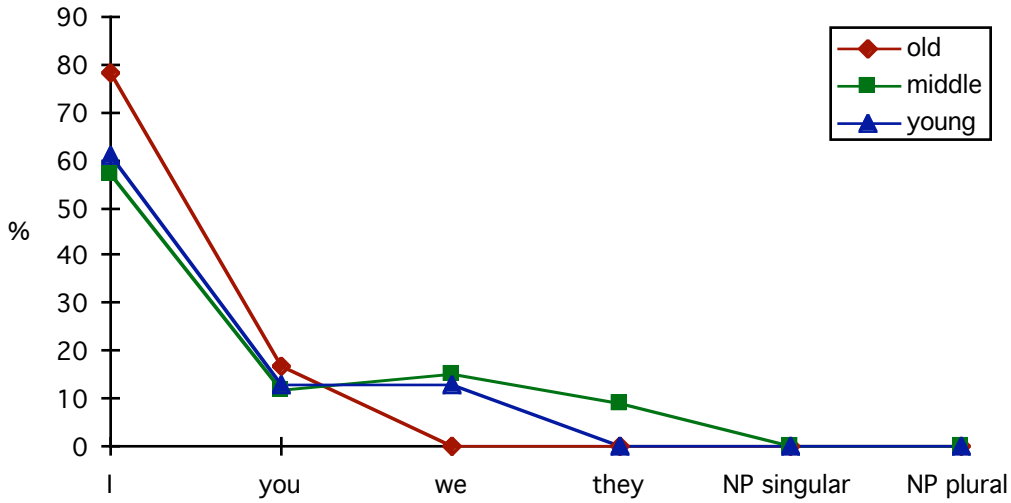
Table 4: Distribution of *do* absence by grammatical person

	%	N
1st person singular *I*	**63**	460
2nd person singular *you*	**13**	86
3rd person sing. *he/she/it*	**0**	120
3rd person sing - full NP	**0**	22
1st person plural *we*	**19**	16
3rd person plural *they*	**5**	40
3rd person plural - full NP	**0**	12

As with *was/were*, a categorical versus variable distinction arises, although the constraints are different in this case: negative *do* is variable in all contexts except for 3rd person singular pronouns and NPs, and plural NPs. However, grammaticality judgment tests show that speakers accept *do* absence with plural NPs, thus the categorical result in the data set collected for this study is likely to be the result of the small number of contexts of use (N=12). We return to this point in section 5.

Figure 3 shows the use of this variable across the three generations.

Figure 3: Distribution of *do* absence by grammatical person and age



Unlike the patterns for *was/were* alternation, there is no difference in rates of use or constraints across three generations, thus no change in progress. Moreover, there are no gender differences: on the basis that this external factor has been demonstrated to be associated with stigmatization elsewhere (e.g. Trudgill 1972), we conclude that *do* absence unlikely to be stigmatised in this community (see also Smith 2001a).

3.3 *Summary of findings*

In sum, the Buckie data provides us with a number of distinct patterns for both variable features:

1. Categorical vs. variable use.
2. The particular patterns are geographically circumscribed.
3. *Was/were* shows slow change in progress towards the standard form, perhaps due to the effect of standard norms. *Do* absence is stable in the community, despite its non-standard status.

Two questions arise from these data:

1. How can a formal, universally constrained system of grammar account for the possibility of this kind of variation?

And more specifically,

2. How can such a system account for the differential patterns of categoricity versus variability as demonstrated in these data?

4. *Linking Syntax and Variation*

The examples we have discussed so far are particularly interesting in that they involve a paradigm of cases, one or more of which display variable behaviour, with the remainder displaying categorical behaviour. The conditioning of whether the behaviour is variable or categorical in this dialect can be related to morphosyntactic features rather than sociolinguistic factors. The conditioning of the variable cases themselves has to do with both morphosyntactic and sociolinguistic factors.

In this section we propose that what lies at the core of this kind of morphosyntactically conditioned alternation between categorical and variable patterns is that the syntactic system gives the same semantic output with two distinct syntactic inputs. This means that we essentially have different syntactic representations for the variants, but those representations map to exactly the same interpretations. This is, of course, the classical definition of a linguistic variable, where given linguistic 'functions' may be realized in different forms (e.g. Labov 1966b). However, what we're attempting to do here is explicate how these two semantically equivalent forms are derived from the syntactic system in a principled way.

We implement this basic idea using ideas from the Minimalist Program as discussed in section 2. The reason for doing this is that this framework offers us a new approach for dealing with the relationship between syntactic elements that receive a semantic interpretation and those that do not.

To see how the idea works schematically, imagine that we have two lexical items, one with the feature specification [F:a] and the other with the specification [F:a, *u*G:], where F is interpretable, and *u*G is not. If we construct a derivation using [F:a] and some

lexical item with the specification [G:b], the final representation will simply look as follows:

(17) … [F:a] … [G:b] …

If, on the other hand, we had elected to use [F:a, *u*G:] rather than [F:a], and we pair this with [G:b], then the final representation would look like (18), where G has checked *u*G:

(18) … [F:a, ~~*u*G~~:b] … [G:b] …

Now notice that both (17) and (18) contain exactly the same interpretable features, and it follows that they will have exactly the same semantic interpretation. However, they are distinctive in that the feature ~~*u*G~~ is present in (18) and hence (18)'s spell-out may differ from that of (17), giving the possibility of variants.[7]

Our claim is that this basic idea is what lies at the heart of morphosyntactic variation. The dialect in question contains lexical items which differ only in whether they bear an extra uninterpretable feature or not.[8] If a lexical item bears such a feature, then the derivation must check this feature, and the surface output may be sensitive to this.

The question of the limits of morphosyntactic variation then becomes a question about the possible collocations of morphosyntactic properties of lexical items, especially functional categories. Presumably some such combinations are ruled out as part of the specification of UG, while others may be possible, but unlikely for functional or historical reasons. If this is correct, then theories of UG and theories of linguistic variation have much to contribute to each other.

Our framework contrasts with the two other major proposals for the interaction between syntactic theory and variationist theory: variable rules on the one hand, and multiple grammars/intra-language parameter setting on the other. We briefly outline these other approaches here, and then point out the differences between them and our approach.

One early attempt to connect generative linguistic theory with the idea of structured variation was the development of variable rules by Labov and his co-workers (e.g. Sankoff and Labov 1979). A variable rule essentially involves the specification of

[7] Note that by spell-out here we actually mean more than just the pronunciation of the feature; uninterpretable features play a crucial role in syntactic movement as well, so that variability in word order and correlations between morphology and word order can also be handled by this system (see Adger and Smith 2002 for discussion of how this works in negative concord constructions).

[8] One concern that may come to mind here is blocking effects. It is often assumed that the lexicon is structured so that it does not contain items with identical properties. From our perspective, the presence of an uninterpretable feature on one lexical item is enough to distinguish it from another, and hence this sort of blocking effect does not come into play.

contexts for linguistic rules, where these contexts are associated with a probability index. For example, Cedergren and Sankoff (1974) report the case of variable deletion of the complementizer *que* in Montréal French. They propose the following rule:

(19) que → <0> / <[+sib], [+cns, -sib], [-cns]> ## ___ ## <[+sib], [+cns, -sib], [-cns]>

This rule essentially says that *que* may be realized as zero in a context where the preceding word has a certain specification, and/or the following word has a certain specification. The observed variability found by the researchers was that preceding and following sibilants freely permitted deletion of *que*, but the absence of the features [+sib] (sibilant) and [+cns] (consonant) restricted the rule application. The rule is associated with probabilities in the fashion specified in Table 5:

Table 5: constraints on variable deletion of the complementizer *que* in Montréal French

Preceding Environment	[+sib] __	[+cns, -sib]__	[-cns] __
Effect	1	.85	.37
Following Environment	[+sib] __	[+cns, -sib]__	[-cns] __
Effect	1	.50	.10
Occupational Class	Workers	Professionals	
Effect	1	.35	
Sex	Women	Men	
Effect	1	1	

The idea is that these probabilities come into play in applying the rule, and account for the observed distribution of the variation in terms of frequencies (which are derivative of the probability of applying the rule). The core intuition here is that variability is deeply embedded in the grammatical competence of speakers of the language as the probability index associated with the rule contexts.

An alternative approach is adopted by researchers like Bickerton (1971), De Camp (1971) and, more recently, Kroch and his co-workers (e.g. Kroch 1989a, 1989b, Taylor 1994, Pintzuk 1999, Santorini 1989). The idea here is that variation in social, situational and temporal domains arises from the existence of more than one grammar which speakers choose from: rather than these grammars incorporating variability within the rule system, the variability arises from the choice of the particular grammar. Bickerton proposed such a system to account for synchronic variation, while Kroch and his associates have used this kind of approach to account for patterns of syntactic change in the history of English and other languages.

Related to this idea, but distinct from it, is recent work on dialect variation by Alison Henry (Henry 1995, Henry et al, 1997, Henry 1999). Henry co-opts the notion of parameter, usually used in syntactic theory to account for variation between languages, and uses it instead to explain dialectal variation within what is usually considered to be a single language.[9] For example, in Belfast English, the following two examples are acceptable variants:

(20) You go away

(21) Go you away

Henry shows that, for some speakers, the inverted form in (21) may occur with all verbs, and argues that this is because the verb optionally moves to C in imperatives. For other speakers, the inversion is only possible with unaccusative verbs, and she proposes that in this case the subject is structurally lower (it is essentially in is VP internal base position). Henry notes that the speakers who allow inversion with all verbs are largely older speakers, and argues that this sociolinguistic fact suggests that this grammar is being lost. She proposes that this loss is due to the fact that movement of main verbs to C in English is generally disallowed, and hence the specific case of movement here is an exception and therefore dispreferred. The important point, though, is that the two dialects have a parametric difference which is embedded in different rule systems.

Both the competing grammars and the parametric approach have in common the idea that there is more than one system of grammatical knowledge in the head of the native speaker, and variation then boils down to decisions that the speaker makes about which grammatical output to choose. Of course these decisions may be below the level of consciousness (e.g. Labov 1994: 78). The variable rule approach contrasts with this in that it states the variation as part of the rule, tying in it much more directly to grammatical competence.

The minimalist system we have proposed above is more akin to the competing grammars/parametric variation approaches, since there is no notion of a probability tied to a particular rule (in fact the only rules, Merge, Move and Agree, are invariant and apply categorically in particular cases). In our proposal, like that of the competing grammars/parametric variation frameworks, the notion of choice of variant is not assumed to be part of the specification of the syntactic system itself, rather it is a separate mechanism that interacts with the syntax. However, our perspective differs from these approaches in that it assumes only one invariant grammatical system, containing universal mechanisms, rather than a range of systems. Each speaker, however, has a lexicon, a memorized store of pairings of syntactic features and lexical meanings, and it is the choice of lexical item that is the source of variation. This choice is influenced by various factors: ease of lexical access (perhaps related to how common the word is), questions of speaker-hearer relationships, notions of social identity, ease of processing etc. These factors can of course be modelled as probabilities attached to the lexical entry,

[9] See Corrigan (1997) for an alternative perspective on variation in Irish English.

should one want to do so.[10] On our view, then, the mechanism that allows variation is primarily at the level of the individual, while the factors that influence variation may be either at the individual level (ease of processing etc.) or at the community level.

Notice that this is a very minimal theory, since the idea that speakers have to choose lexical items is one which we simply cannot do without. Localizing morphosyntactic variation in choice of lexical items means that we do not have to posit any special mechanism to deal with variation: variation is precisely what we should expect.[11]

5. *Analysis*

In this section we provide concrete analyses of the kinds of variation we introduced in section 2. Our purpose here is not so much to show that these are the right analyses, but rather to show that the theoretical system we adopt makes available a fruitful approach to this kind of variation.

5.1 *Was/Were alternation*

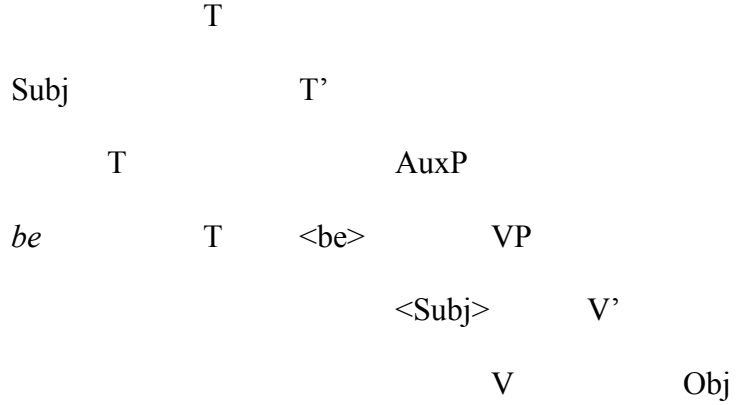
The first type of variation we will consider within this framework is the variation between *was* and *were*. Recall that with plural subjects, only the pronoun *they* categorically triggers the appearance of *were*; first and second person pronouns, and full NPs appears with both.

We adopt a standard view of the syntax of finite *be* in English: it raises and adjoins to T (e.g Pollock 1989). In the case of auxiliary *be* we assume that it originates in some auxiliary position above the verb phrase, while in the case of copular *be*, we assume it originates inside VP. Nothing turns on these assumptions; what is important is that *be* raises to finite T if there are no other auxiliaries intervening:

[10] It is not clear to us that this is the correct way to deal with all constraints on variability, although it is clear that language learners are sensitive to statistical patterns in variable input (e.g. Saffran, Aslin and Newport 1998). Whether the processor is also sensitive to probabilities is a controversial matter.

[11] A referee points out that it is not clear how variation such as the Jespersen cycle of negation, or verbal clusters in West Germanic can be related to the idea that all morphosyntactic variation is essentially lexical. On negation, see Adger and Smith (2002), where we argue that variation in negative concord arises from the interaction between movement of verbs and negative XPs, both lexically triggered. We will not speculate on verbal cluster variation here.

(22)



We will assume that pronouns bear interpretable person and number features. We distinguish first and second person features from third by the specifications [pers:+] for the former and [pers:-] for the latter, assuming that third person is lack of a positive specification for person (see, for example, Harley and Ritter 2002 and references therein). We will assume here that [pers:1] and [pers:2] are the two possible positive specifications for person.[12]

With this in mind, T[past] will bear unvalued features for number and person as follows:

(23) T[tense:past, *u*num:, *u*pers:]

Now, when T Agrees with a pronominal subject, these features are checked and valued. For example, we will have:

(24) T[tense:past, *u*case:nom, *u*num:, *u*pers:] … pronoun[num:pl, pers:1, *u*case:] →
T[tense:past, ~~*u*case~~:nom, ~~*u*num~~:pl, ~~*u*pers~~:1] … pronoun[num:pl, pers:1, ~~*u*case~~:nom]

The spellout of [*be* T] here will be *were* and the spellout of the pronominal subject will be *we*.[13] Similarly, if we combine T with a third person singular, we have:

[12] Questions arise here about implementation, since what we have just stipulated does not follow from the formalism we have adopted. See, for example, Harbour 2003, or Harley and Ritter 2002, for different ways of deriving these results from a theory of phi-features.
[13] We assume here that morphemes are spellouts of fully specified feature bundles and abstract away from the question of how partial specification of morphemes affects lexical insertion, as in theories like Distributed Morphology (see Halle and Marantz 1993 for discussion).

(25) T[tense:past, *u*case:nom, *u*num:, *u*pers:] … pronoun[gen:fem, num:sing, pers:-, *u*case:] →
T[tense:past, ~~*u*case~~:nom, ~~*u*num~~:sing, ~~*u*pers~~:-] … pronoun[gen:fem, num:sing, pers:-, ~~*u*case~~:nom]

This derivation will give the spellouts *was* and *she*.

So far, we expect no variation; the spellout of the verb will depend categorically on its featural content. However, variation will arise if there is another lexical item which can combine with the same pronominals to give the same output of interpretable features, but which has a different featural content in terms of uninterpretable features. The following lexical item, which we will call T2, will do the trick:

(26) T2[tense:past, *u*case:nom, *u*pers:]

Now either T or T2 will be able to check with a first person plural pronoun. If we choose T, the derivation runs just as in (24), with the output *were*. If however, we choose T2, the person feature of T2 will be valued, and everything will check appropriately, giving exactly the same set of *interpretable* features as we saw with T:

(27) T[tense:past, *u*case:nom, *u*pers:] … pronoun[num:pl, pers:1, *u*case:] →
T[tense:past, ~~*u*case~~:nom, ~~*u*pers~~:1] … pronoun[num:pl, pers:1, ~~*u*case~~:nom]

However, the featural content of [*be* T2] differs from that of [*be* T], and the morphology can be sensitive to this, spelling out the former as *was*. More specifically, let us propose the following spellout for this T:

(28) [*be* T2[tense:past, ~~*u*case~~:nom, ~~*u*pers~~:+]] spells out as *was*

We therefore have variable *were* and *was* with first person plural. Note that we have required T2 to have a positive specification for person. We will see immediately below that this is what derives the categoricality of third person plural *they were*.

What about the other cases? First person singular will also be able to check with both lexical entries, but will give *was* as output in either case, since [1] counts as a positive value for [*u*pers]:

(29) a. [*be* T[tense:past, ~~*u*case~~:nom , ~~*u*num~~:sing, ~~*u*pers~~:1]] spells out as *was*
b. [*be* T2[tense:past, ~~*u*case~~:nom, ~~*u*pers~~:1]] spells out as *was*

Third person singular will combine with T2, but there is no spellout for a minus version of [*u*pers] on T2 without an associated number feature:

(30) a. [be T[tense:past, ~~*u*case~~:nom , ~~*u*num~~:sing, ~~*u*pers~~:-]] spells out as *was*
b. [be T2[tense:past, ~~*u*case~~:nom, ~~*u*pers~~:-]] no spellout!

Second person works just like first person plural, combining with either T to give a variable output:

(31) a. [*be* T[tense:past, ~~*u*case~~:nom , ~~*u*num~~:sing, ~~*u*pers~~:2]] spells out as *were*
b. [*be* T2[tense:past, ~~*u*case~~:nom, ~~*u*pers~~:1]] spells out as *was*

Third person plural, which was categorical, cannot value [*u*pers] on T2 as positive, and so there is no appropriate spellout. It follows that there is no derivation leading to the output *they was*.

(32) a. [*be* T[tense:past, ~~*u*case~~:nom , ~~*u*num~~:pl, ~~*u*pers~~:-]] spells out as *were*
b. [*be* T2[tense:past, ~~*u*case~~:nom, ~~*u*pers~~:-]] → no spellout!

The essential intuition behind all of these cases of variability, is that there are two lexical items either of which can combine with some subset of the pronominal paradigm. Once the various features of these lexical items are checked, the final output is identical in terms of interpretable features, and so the meaning is the same in both cases. However, the morphological form of the spellouts attached to these lexical items can be sensitive to all of their features, hence the surface form may vary. The variable categorical split is due to the interaction of the features of the pronouns, and the morphological well-formedness of the features of the *be* plus T composite.

The Buckie system is relatively rare in having this variable/categorical split. Many other systems allow variability throughout the paradigm (e.g. Cheshire 1982). This is straighforwardly captured by assuming that [*be* T2] in these other systems spells out as *was* irrespective of the value of [*u*pers].

5.2 *Variability in NP agreement*

Finally we turn to *was*/*were* variability with plural NPs, which contrasts with the categoricality of plural agreement with *they*.

The split between the capabilities of full NPs and pronouns to trigger agreement is one which is well-established for other languages. For example, in Welsh, subject pronouns trigger agreement on their verbs:

(33) Gwelodd ef y car.
Saw he the car
'He saw the car.'

(34) Gwelsant hwy y car.
Saw-3pl they the car
'They saw the car.'

However, this contrasts with full NPs, which do not trigger subject agreement:

(35) Gwelodd y dyn y car.
Saw the man the car
'The man saw the car.'

(36) Gwelodd y dynion y car.
Saw the men the car
'The men saw the car.'

(37) *Gwelsant y dynion y car.
Saw-3pl the men the car
'The men saw the car.'

We will assume then that UG makes available a pronoun/NP split, as well as a singular/plural split. We implement this in our feature system by assuming that full NPs consist of a determiner layer selecting an NP (Abney 1987):

(38)

D

D NP

When the head noun bears an interpretable number feature, this feature may, or may not, appear on the selecting D, depending on the lexical specification of D. Welsh DPs, then, uniformly have singular determiners, and it is the determiners that trigger number agreement on the verbs:[14]

(39) V-[*u*num:] [$_{DP}$ D[*u*num:sing] NP[num[pl]] →
V-[~~*u*num~~:sing] [$_{DP}$ D[~~*u*num~~:sing] NP[num[pl]]

There is some intriguing evidence that Buckie follows this pattern. Demonstratives display variable agreement for number with their head noun:

Plural proximate
(40) a. I'd a' ***these*** cuttings. (j:987.1)
I had all these cuttings.

[14] We assume here that the number feature on D is uninterpretable, and that interpretable number is carried by the lexical category lower down, or by some functional element (see, for example, Ritter 1991, Borer 2004).

b. My mam had all ***this*** stories o' ootside folk. (m:903.4)
My mother had all these stories about foreign people.

Plural distal

(41) a. She's one of ***those*** bonny big houses. (6:311.1)
She has one of those lovely big houses
b. But I 'd piles of ***that*** photos of the dancing. (e:212.8)
But I had piles of those photographs of the dancing
c. That was ain o' ***them*** grogain suits. (a:971.4)
That was one of those grogain suits
d. It was a' bonny, able drifters, ***thon*** steel drifters.
They were all good able drifters, those steel drifters

Singular distal

(42) a. Did he mairry again after Linda gied away and marriet ***thon*** loon? (j:675.42)
Did he marry again after Linda went away and married that guy?
b. We 'd forty staff employed in ***that*** job. (*:98.7)
We had forty staff employed in that job.

Here we have a number of variants used, including the relic form *thon/yon* which is still used in some Scottish dialects and the pandialectal use of *them*.

Table 6 shows the distribution of forms across these different contexts of use.

Table 6: Distribution of demonstratives in different contexts of use

Distribution of *singular distal demonstratives*		
	N	%
That	1991	97
thon	55	3
Distribution of *plural proximate demonstratives*		
	N	%
these	33	34
this	65	66
Distribution of *plural distal demonstratives*		
	N	%
those	7	4
that	132	69
thon	40	21
them	13	7

In singular contexts, there is virtually no variation: in this case, the standard form *that* is used 97% of the time and the relic form *thon* only 3%.

In contrast, plural demonstratives demonstrate high rates of use of non-agreement in both proximate (66% *this*) and distal contexts (69% *that*). In addition, there is relatively high rates of the older form *thon* in this context.

We will not provide an analysis of this pattern here, for reasons of space, but merely assume that it provides good evidence that D in Buckie may be specified as singular. On our account this will be a property of the lexical items which have the categorial feature D.

Given this, we now have an explanation for *was*/*were* variability with plural DPs. Recall that T is specified as follows (T2 is irrelevant here since DPs are [pers: -]):

(43) T[tense:past, *u*case:nom, *u*num:, *u*pers:]

If the subject is a DP, it will variably have the specification [*u*num:sing]/[*u*num:pl]on D, perhaps depending on whether the feature is lexically specified as valued or not:

(44) T[tense:past, *u*case:nom, *u*num:, *u*pers:] … DP[*u*num:sing, pers:-, *u*case:]
→
T[tense:past, ~~*u*case~~:nom, ~~*u*num~~:sing, ~~*u*pers~~:-] … DP[~~*u*num~~:sing, pers:-, ~~*u*case~~:nom]
The mothers was …

(45) T[tense:past, *u*case:nom, *u*num:, *u*pers:] … DP[*u*num:pl, pers:-, *u*case:] →
T[tense:past, ~~*u*case~~:nom, ~~*u*num~~:pl, ~~*u*pers~~:-] … DP[~~*u*num~~:pl, pers:-, ~~*u*case~~:nom]
The mothers were …

The variability we see here, then, depends not on multiple lexical entries for T, but rather on multiple lexical entries for D.

5.3 ***Do****-absence*

The phenomenon of *do*-absence, discussed in section 3, is variable in contexts of non-third person singular agreement. It is categorical in past tense contexts, and with third person singular subjects, irrespective of whether they are pronominals or full NPs.

The analysis we propose for this phenomenon also localises the possibility of variation in the properties of lexical elements. However, what we see here does not derive from choice of a lexical item *qua* feature bundle, but rather from the choice of morpheme associated with a lexical item by the spellout mechanisms.

As discussed in Section 2, we assume that the operation that inflects the main verb is a morphological operation that attaches finite T to the verb as a suffix. As is well known, this operation is sensitive to whether negation intervenes between T and the verb. If

negation does intervene, then the operation cannot take place, and a dummy verb *do* is inserted to undergo inflection:

(46) The books –ed[+affix] inform us all
→ The books inform–ed[+affix] us all

(47) The books –ed[+affix] not inform us all
→ The books **do**–ed[+affix] not inform us all

The morphological interpretation of V+T may be far more complex than simple concatenation (involving, for example, ablaut, zero-realisation etc), and we will not take a stand on how such morphology is accomplished (whether by readjustment rules, paradigmatic look-up, rules of morphological referral, etc).

In the Standard English present tense, except for third person singular, the morpheme associated with T is null, but it must still be assumed to be an affix, since we still find *do*-support:

(48) The books –0[+affix] inform us all
→ The books inform–0[+affix] us all

(49) The books –0[+affix] not inform us all
→ The books do–0[+affix] not inform us all

We can straightforwardly capture the variation in *do*-absence found in the Buckie dialect by assuming that the zero morpheme associated with non-third singular T simply has two forms: one is [+affix] while the other is not. This kind of surface variation is well-studied in variationist work: for example, the difference between *in*/*ing* variants in different varieties of English (e.g. Houston 1991). We therefore have the two following:

(50) T[tense:pres, upers:-, unum:sing] → -z[+affix]

(51) T[tense:pres] → -0[+affix]; 0[-affix]

To see this more explicitly, take an example like (52) below:

(52) [$_{TP}$ pronoun[pers:-, num:pl, ~~*u*case~~:nom] T[tense:pres, ~~*u*pers~~:-, ~~*u*num~~:pl, ~~*u*case~~:nom] Negation [V NP]]

We now need to choose a morpheme for T. Clearly we cannot choose the morpheme -z[+affix], since it does not match T's features. We therefore insert the elsewhere morpheme for present tense which has two allomorphs. This gives us:

(53) They -0[+affix] na lose …

(54) They 0[-affix] na lose …

Of these, only the former triggers *do*-support:

(55) They do-0[+affix] na lose …

(56) They 0[-affix] na ken …

The variation we see here, then, reduces to choice of allomorph for a particular morpheme. Essentially we have standard allomorphy but without a conditioning context. This is different from the variation we saw in the preceding section, which arose from the different lexical items (feature bundles) that entered the derivation, but it is still crucially localised in properties of lexical elements.

Finally, we can account for the variability in the ability of full DPs license *do*-absence as a result of the idea, motivated earlier, that DPs containing plural nouns need not bear plural agreement features at the D level. Consider a derivation where the DP *the quines* ('the girls') is the subject. Prior to movement of this subject to the specifier of TP, we have

(57) T [*u*num:]… [$_{DP}$ the[*u*num:pl] quines[num:pl]]

When T Agrees with D, its uninterpretable feature will be valued and checked, and the spell-out associated with this feature bundle [~~*u*num~~:pl] is zero, with its two variants. This will predict the eventual forms:

(58) a. The quines do na ken
The girls do not know
b. The quines na ken
The girls do not know

If D however bears the feature [*u*num:sing], then T will match and value as T[*u*num:sing]. T in this case has the /-z/ spellout, and forces *do*-support. We therefore correctly predict the (categorical) contrast between (55) and (56):

(59) The quines doesna ken.
The girls do not know

(60) *The quines na kens.

Once again, note that the interpretable features of (58) and (59) are identical: all three variants are predicted to have the same meaning.

6. *Conclusion*

Our basic proposal here has been that a Minimalist approach to syntax melds extremely well with the kinds of data that variationists study because it has two core properties: it builds the notion of (tacit) choice of lexical item into the syntactic system, and it allows derivations with different lexical items to converge on the same basic semantic representation, thus capturing the multiple form/single meaning notion of a linguistic variable. The orderly patterns of variation seen across (groups of) individuals reduces to the lexical choice by an individual speaker of functional elements with particular feature specifications. This choice is influenced by a range of use-related factors, such as processing, frequency of individual lexical items in the register or community discourse, and broader sociolinguistic and communicative factors. These use-related influences are, for us, outside the grammar proper, which is simply a specification of the syntactic, semantic and morphophonological properties of lexical items together with an invariant syntactic engine sensitive to these properties. They are, however, part of language in the broader sense, and their study may impact on our understanding of how I-language is embedded within other cognitive mechanisms.

We would like to emphasize that our purpose in this paper has not been to provide a theory of how these various factors influence lexical choice, but rather to highlight the usefulness of drawing a distinction between (i) the mechanism which allows variability in an essentially invariant (minimalist) syntactic system, part of I-language, and (ii) factors which may be related to individuals' biologically constrained capacities to use language (e.g. processing, prosodic or information structure theoretic factors) or to the (possibly tacit) desire of individuals to conform to, or to rebel against, their communities' impositions.

7. References

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