Explaining microvariation with the Tolerance Principle

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Much work in comparative syntax proposes that variation is explained both in terms of variation in 'parameters' and variation in spellout (Barbiers 2009), and yet our understanding of 'variation in spellout' remains underdeveloped. We contribute to this with a study of the *amn't* gap, which we show to be conditioned by inventories of *forms* rather than *features*, and we argue such variation must be understood in terms of spellout. Our account demonstrates the utility of Yang's (2016) *Tolerance Principle* in explaining morphosyntactic microvariation.

Background. Bresnan (2001) notes a puzzle concerning the distribution of *amn't* across dialects: while it is missing in most dialects and replaced by *aren't* in inversions (inc. Standard English, StE; 1), it is possible both with inversions and declaratives in Hiberno-English (HbE) and only in inversions in Scottish English (ScE); see (1-3). Bresnan proposes an analysis in terms of competition between synthetic and analytic forms: in ScE the Scots-specific *amnae* outcompetes the more marked *amn't* in declaratives, whereas in StE (which lacks *amn't* by accident) *am not* outcompetes a mismatching default *aren't*. Since these competitors are impossible in inversions (1c, 3b), the more marked forms occur in tags.

1. a. I'm not your friend. b. I'm your friend, aren't I? c. *I'm your friend, am not I?
2. a. I amn't your friend. *ScE, ✓HbE b. I'm your friend, amn't I? ✓ScE, ✓HbE
3. a. I amnae your friend. b. *I'm your friend, amnae I?

New data from the *Scots Syntax Atlas* shows that the picture in Scotland is much more complex than what Bresnan describes. Based on judgment data for examples with *amn't* in declaratives (2a) and tags (2b), as well as declarative *amnae* (3a), we make the following observations:

(i) 2b is widely accepted across Scotland
(ii) the *2a✓2b pattern is particularly common in (a) the northeast, (b) Fife
(iii) ✓2a✓2b is particularly common in (a) the Highlands, (b) Edinburgh, (c) Dundee
(iv) outside of the Highlands (where *–nae* is not used), there is a significant correlation between scores for declarative *amn't* and *amnae*, esp. for older speakers (R = 0.57)

This reveals a complex interaction between *amn't* and *–nae* in non-inversion contexts. (iv) indicates that accepting *amnae* often comes with accepting declarative *amn't.* As for (ii)-(iii), what sets the northeast and Fife apart is that they have wider ranges of irregular *–nae* forms in their inventories (*daa* for *don't*, *winna* for *won't*, *caa* for *can't* in both regions, various null auxiliary forms in the NE; Smith 2000) which are largely absent in the others. We propose that these interactions can be understood in terms of productivity: the morphological inventory of the *-nae* rule impacts upon the productivity of the *-n't* rule, but, crucially, only in declaratives. We develop an account in terms of the Tolerance Principle (2016; TP) and an independently motivated analysis of negation in Scots.

***-n't* and productivity.** Yang (2017) proposes an account of **amn't* in terms of productivity, with the TP defining the threshold for a productive rule. On Yang's account, learners who are exposed to negated auxiliaries in the input posit rules for affixation of the *–n't* to auxiliaries, and whether such a rule becomes productive and is retained as part of their grammar depends on whether the number of exceptions to that rule is below the threshold defined by the TP. The threshold is a function of the number of putative output forms for the rule which are robustly attested in the input, with a higher N tolerating proportionally fewer exceptions. Learners posit the most general rule possible, and if this doesn't achieve productivity they narrow down to a more specific rule. Gaps come about when a narrower productive rule doesn't generate a given form *and* that form is not robustly attested in the input. Thus *won't* is not prone to becoming a gap because it is extremely common in usage, but *amn't* is very uncommon even in communities where it is widely accepted (we show this with corpus data).

The task for making this analysis work is to show that there is no productive rule which would generate *amn't*. Yang considers the most general rule, given in (4a), which would apply to all 18 robustly attested; this fails to achieve productivity in StE because it has 12 exceptions, in (4b). Note that this includes 6 exceptions from suppletive *ain't* being used for all forms of

present *be* and *have*; without this, the rule would be productive. If the rule fails to become productive, we expect gaps to come about, hence the *amn't* gap in these varieties.

4. a. NEG → ṇt b. Exceptions: *can't, won't, don't, mustn't, aren't, weren't, ain't* (x6)

Yang suggests that the reliance on *ain't* is a virtue of his account as it gives us an explanation of the present of *amn't* in Ireland and Scotland, where *ain't* is virtually absent from vernacular speech (Anderwald 2002). But there are problems with this explanation; for instance, Welsh English is described as lacking *ain't* (Szmrecsanyi & Kortmann 2009) as well as *amn't* (Anderwald 2008), and WE typically shares the same inventory of negated auxiliaries as HbE.

We propose a fix for Yang's analysis which provides the basis for an explanation of the Scots data. First, we note that the inventory of exceptions in 4b must include an additional contracted form of *don't*, [dɔ], which as Kaisse (1985) argues is not derived by regular phonological rules and so must be stored as a portmanteau (like *won't*). Adding [dɔ] to 4b renders 4a unproductive even without *ain't*, thus predicting the absence of *amn't* in WE. Second, the list of exceptions to 4a is different for HbE: whereas in WE and most AmE varieties *aren't* and *weren't* are monosyllables (e.g. [arnt] in AmE and [ɑ:nt] in non-rhotic British dialects), in HbE they are typically bisyllabic (e.g. [arṇt] or [arənt]) and thus fit with 4a. The HbE analysis extends to the Highlands Scots, which has the same negative auxiliary inventory and the same tendency to realise *aren't* and *weren't* as bisyllabic. This gives us an account of (iiia), and the beginnings of an account of (iiib,c), since *aren't* and *weren't* are typically pronounced variably as mono- and bisyllabic throughout most of Scotland. But we still need to explain (i)-(ii).

The role of *-nae*. To begin with we must determine how the addition of *–nae* forms to the mix impacts upon the acquisition of a NEG affixation rule; clearly *–nae* forms are exceptions to *–n't* affixation rules and vice versa, so learners must subdivide the input and posit contextually restricted rules. We suggest that a number of different options present themselves to learners and thus give rise to the variation we see across the country. For the first pass, the most obvious division of the data may seem to be between *–nae* and *–n't*, with the two forms being analysed as different heads that are subject to different rules. However we suggest that the most salient division to make in the input is between negated auxiliaries in T and those in C, since this division is cued both by linear order (in C vs in T), semantic properties (NEG in C differs from standard negation in a number of ways, cf. Holmberg 2013, Jamieson 2018), and also morphological properties; we show that the forms of negation often differ in the two environments, in Scots and beyond. These facts suggest that NEG in T are distinct syntactic elements that may be treated with distinct realization rules, and so we propose that learners posit the rule in 5a, which treats only those auxiliaries in C. 5a becomes productive and generates *amn't* in inversions, because is a reduced inventory of exceptions in C: [dɔ] doesn't occur in C, *mustn't* is extremely rare in C, and *–nae* forms don't invert. Thus we explain (i).

5. a. NEG → ṇt / C b. Exceptions: *can't, won't, don't, (aren't, weren't)* [threshold = 6]

With this in place, we turn to the question of whether learners acquire *2a✓2b or ✓2a✓2b: this depends on the rules that learners acquire for NEG in T. We propose that learners first posit rules for the different morphemes like 5a (but restricted to / T), as in 6a and 6b. Our key claim is that once they have rules for each morpheme, they may then collapse 6a and 7a to arrive at a single variable rule (Labov 1969), as in 8a. The number of exceptions to 8a differs across dialects and is conditioned by irregularities with both *-n't* and *-nae*. We show that this explains (ii)-(iii): in the areas with more irregular *-nae* forms, 8a fails to be productive and so there's no regular rule to generate *amn't*. It also explains (iv), since *amnae* is also uncommon and so susceptible to being a gap in the absence of a productive rule like 8a.

6. a. NEG → ne / T b. Potential exceptions: *dinnae, winnae, daa, caa, -na* (zero aux)

7. a. NEG → ṇt / T b. Potential exceptions: *5b + mustn't, [dɔ]*

8. a. NEG → ṇt *or* ne / T b. Potential exceptions: *5b + 7b*

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