

Some themes from Borer

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QMUL

April, 2022

My initial plan for this introduction was to sketch out a kind of panoramic overview of Hagit's contribution to linguistics over the past few decades, but I quickly realised that the scope and depth of her work made this an impossibility. Aside from Hagit's major input to the theory of syntax, there are also her contributions to the theories of learnability and acquisition, her empirical cross linguistic work, showing how universal aspects of the human linguistic faculty are variably expressed across different languages, her research on the specificities of the syntactic and morphological analysis of Hebrew and other Semitic languages (which would comprise the whole of a highly successful career for many), and much, much more.

In a radical reduction of ambition, I've decided instead to pick one early paper, and show how the ideas and questions raised in that paper have developed and ramified, from Hagit's research as a graduate student at MIT to her current work as Professor of Linguistics at Queen Mary. So less of a panorama, and more of a flat pebble skittering across a very wide, very deep lake.

The paper I've chosen is about the relation of morphology to syntax, and its themes connect, in a way that I'll try to draw out in what follows, to various issues in her magisterial *Structuring Sense* trilogy (*In Name Only*, Borer 2005a; *The Normal Course of Events*, Borer 2005b; *Taking Form*, Borer 2013). I'd have liked to have done the same thing with her early *I-Subjects/Anaphoric Agr* diptych of *Linguistic Inquiry* articles (Borer 1986, Borer 1989), connecting the concept of syntactic licensing developed there to the idea of open values and range assignment in *Structuring Sense*, but that will have to await another opportunity. I hope, though, that this approach gives a sense of the way that Hagit's work has always tackled the most serious issues in syntax and how it continues both to elucidate these and to challenge orthodoxies in our field.

I still have, tucked into a filing cabinet in my office, notebooks from when I was a visiting PhD student at the University of Massachusetts at Amherst, in 1991. I remember turning up in the department, a bit bleary eyed from my first ever trans-Atlantic flight, and walking around in a kind of star-struck state; just seeing the names on the office doors was both exciting and terrifying: Partee, Bach, Selkirk, Kratzer, McCarthy, Speas and, of course, Borer. I registered to audit courses with Bach (Fieldwork), Speas (Morphosyntax) and Borer (Syntax), all of which were amazing, but the one that I learned most from, without doubt, was Hagit's. This took place on Thursday mornings and I didn't miss a single one, even though the weekly late-night LGBT Disco in Northampton was on Wednesday nights (I also don't think I missed any of those!).

Hagit's course was probably the first time I learned to see beyond the details of particular frameworks to the conceptual and theoretical issues that those frameworks were trying to address. I'd come from a background in Edinburgh where I'd worked with Combinatory Categorical Grammar, Montague Semantics, Kamp-style DRT, and Unification Based frameworks like HPSG and Unification Categorical Grammar, and I was very comfortable with the formalisms and mechanisms of those approaches; I also had a background in GB from undergraduate classes and my own reading, but I hadn't ever written a research paper using that framework (though I had begun to play around with some of the ideas that were just emerging from the photocopying mills of MIT and that eventually morphed into Minimalism). But in Hagit's class, I realised that the complex formal systems I was fascinated by were best thought of as simply a method for tackling questions about the nature of language, as opposed to ends in themselves. I think it was that class that woke me up from my seduction by formalism to realise that what is, fundamentally, part of nature, could be, and perhaps should be, thought about more directly. More specifically, I realised that the lexicalism that all of the formal frameworks I had been working with shouldn't be thought of as an axiom, but could rather be a question.

One of the papers I read at that time was Hagit's 1984 NELS paper *The Projection Principle and Rules of Morphology* (PPRM, Borer 1984). I don't think Hagit assigned this paper in the course I took with her, but my notes on her classes about the morphology-syntax relation have its title circled in red with a READ THIS!!! annotation. This paper argues that the Projection Principle, that is the idea that the properties of lexical items remain constant throughout the derivation, should apply to inherent features of lexical items, and not to the assignment relations those lexical items enter into. This is very non-lexicalist. It strips out of lexical items information

that lexicalist theories endow them with. Take, for example, passives. In a lexicalist theory, the case assignment and theta-assignment properties of an active verb like *hit* are changed via lexical rule (or related via a redundancy rule) to its (homophonous) passive. In the passive, the lexical rule has the effect of removing the accusative case assignment capacity of the verb and ensuring that the agent theta-role is assigned to a *by*-phrase, rather than to the grammatical subject (e.g. Bresnan 1982). The Projection Principle, as Borer interprets it in this paper, rules out such an analysis, since the inherent features of the lexical item (case and theta-assignment) must stay the same; but her interpretation does allow the mode of assignment to change, since the mode of assignment is not an inherent feature. Specifically, case can be assigned to the passive morpheme in the spirit of the approach developed in Jaeggli (1982), and the preposition *by* can transmit the theta-role of the verb: the inherent features of the verb stay the same, but the way they are assigned differs. Borer shows that this approach covers a range of other cases, such as accusative clitics in both direct object constructions and in causatives in Romance languages.

The paper then notes that this interpretation of the Projection Principle forces derivational, category-altering, morphology to have an analysis whereby the word is constructed at a pre-syntactic level, since changing, for example, the verb *enjoy* to the adjective *enjoyable* clearly changes an inherent [V] feature to an [A] feature, violating the Projection Principle. Borer's approach therefore derives the distinction between derivational and inflectional morphology, assigning the former to a pre-syntactic level, in a way that is stipulated in Chomsky's *Remarks on Nominalization* (Chomsky 1970) and subsequent work. Borer's system does not, however, force such an analysis for inflectional morphology. For example, adjectival agreement, or the morphology that encodes tense and aspect specification via auxiliaries, could, in principle, be analysed either via a pre-syntactic morphological rule, or via a rule applying in the syntax, but which feeds the formation of words. Word formation rules, then, can precede or follow syntactic rules.

This architecture predicts that certain 'inflectional' features should be found inside derivational structures. Borer gives examples from Hebrew compounding to show that this prediction is correct:

- (1) a. kal-raglayim (literally, light-legs) 'fast'
- b. gan-xayot (literally, garden-animals) 'zoo'

These compounds have idiosyncratic readings, which suggests that they are listed as words, and they have word-like behaviour in general. However, they have plural inflection on one of their parts (*-im* and *-ot*). It follows that the plural inflectional rule has taken place before the word-forming compounding rule.

However, these inflectional features are inaccessible to further syntactic rules (they do not, for example, enter into agreement) and Borer argues that the opacity of such structures follows from a kind of erasure of structural information as the derivational word-formation processes apply. The upshot is that certain features of words are available to the syntax, but other, more deeply embedded ones, are not, weakening the Lexicalist Hypothesis in just the right ways.

The idea that the same rule can apply before word formation or after, as long as it does not change inherent features, is used to account for the behaviour of *-ing* and *-en* in English. These affixes appear to be ambiguous: stems with *-ing* attached can behave as nominals, with nominal case assigning properties, or as verbs, with verbal properties (2); similarly, stems with *-en* attached can behave as adjectives, or as verbs (3):

- (2) a. the eating of the apple made Snow White sick.
- b. eating the apple made Snow White sick.
- (3) a. the apple was (quite) uneaten (*by Snow White).
- b. the apple was (*quite) eaten by Snow White.

Focussing on *-ing*, Borer's idea is that if *-ing* is affixed pre-syntactically, the result is a nominalized structure (since the category [V], an inherent feature, is changed to [N]), but if *-ing* is affixed syntactically, via affix-hopping from Infl, the structure is a verbal gerund, with verbal behaviours. What one might think of as a lexical ambiguity turns out to be derived from the timing of when *-ing* is composed with the stem: it is, in fact, fundamentally a structural ambiguity, not a lexical one. A similar deconstruction of the ambiguity between syntactic and adjectival passives in *-en* is follows the same line of reasoning.

The paper concludes with an analysis of preposition stranding in English vs French, which extends the idea that some syntax can take place before a morphological rule does. Borer takes reanalysis of prepositions and their governing verbs to be a morphological rule that forms a complex verb by combining a preposition with a preceding verb, though the preposition is in constituency with its complement in phrase-structure:

(4) [V [V ...] [P ...]] (NP)

Assuming with Kayne (1981) that French prepositions assign Oblique case, while English prepositions assign Accusative, Borer argues that, after reanalysis, the new structure results in a case clash in French but not in English. This is because both the P and the V assign Accusative case in English, but they assign mismatched cases (Accusative and Oblique) in French. This means that if the NP in (4) is extracted, and reanalysis takes place, the trace of NP will have conflicted case features in French, and preposition stranding will be ruled out¹.

Borer argues that reanalysis here creates a word-like unit, and that that unit's morphological nature provides an explanation for the following paradigm:

- (5) a. John was taken advantage of [e].
b. Who did Mary take advantage of [e]?
c. Advantage was taken [e] of John.
d. How much advantage did Mary take [e] of John?
e. *How much advantage was John taken [e] of [e]?
f. *Who was advantage taken [e] of [e]?

Reanalysis must take place to license the preposition stranding in the passive and wh-movement examples. However, since reanalysis is morphological, it cannot take place across a trace, so that *of* cannot be reanalysed as being compounded with *taken* in (5e) and (5f), explaining why these examples are ungrammatical. Aside from reanalysis, phrasal units with word-like properties are also seen in compound examples like the following, which have specific, idiosyncratic meanings, but seem to require syntactic case assignment to have taken place:

- (6) a. coat of arms
b. pain au chocolat

Though PPRM is an early paper, it prefigures a number of important ideas that re-emerge prominently in Borer's later work: the removal of information from lexical items; the notion

¹If reanalysis does not take place, the trace following the P is assumed not to be properly governed, as only Vs properly govern. This means that absence of reanalysis is compatible with an unmoved NP, which requires case but does not require proper government, but not with a trace, which requires both.

that word-formation can be post-syntactic; and the question of how lexical meanings can be associated with syntactic structure.

The first of these ideas, which is developed throughout the *Structuring Sense* trilogy, is that what might seem to be a lexical property, because it affects word formation (e.g. passive), is actually syntactic. This is developed throughout *Structuring Sense*, where it is argued that distinctions like those between common and proper nouns, mass and count nouns, argument-structure and result nominalizations (which I return to below), or telic and atelic verbs, should be understood as syntactic, not lexical. In a typically Borerian “let’s see where the logic takes us” approach, this in turn leads to the radical idea that open class items, like verbs and nouns, are “‘stuff’ which is poured into the structural mould” of closed class, functional elements (*In Name Only*, p108). This further implies that argument structure itself is simply not a part of lexical specification and hence must be negotiated by non-lexical means, a position that would have seemed very outré until recently, but which has become more and more accepted.

A second important idea in PPRM is that word formation can take place both before and after syntactic operations have taken place. While this was, of course a core claim of early transformational models, *Remarks on Nominalization* had set off an alternative research programme that ultimately led to the radically lexicalist theories I’d encountered in Edinburgh. Baker’s PhD thesis in the mid 1980s (published as Baker 1988) also pushed back against the idea that all word formation takes place pre-syntactically, and indeed his model takes word formation in general to take place in the syntax. However, Baker’s approach does not derive the ambiguity that Borer observes with *-ing* and *-en*. Borer’s alternative, that word formation effectively works independently of syntax (indeed, in parallel to syntax), does capture the ambiguity and has the advantage that it makes sense of the pervasiveness and systematicity of these apparently lexical phenomena.

This same basic concept is at also play in Borer’s analysis, in *Taking Form*, of an ambiguity in English nominalizations. Grimshaw (1990) provides extensive argumentation showing that nominalizations come in two sorts, even though they are morphologically uniform: ‘complex event’ nominalizations (which Borer calls ‘argument-structure’ nominalizations) denote events and syntactically require arguments, while ‘result’ nominalizations do not.

- (7) a. Frequent destruction *(of important documents) took place during Johnston’s prime-ministership.

- b. The destruction (of important documents) took place during Johnston’s prime-ministership.

The adjective frequent in (7a) forces an event reading of the nominalization, and with that reading comes the requirement of an internal argument, leading to the contrast with (7b). Grimshaw deals with this via a lexical rule operating on quite rich information stored in the lexical entry of the verb; Borer, in contrast, extending her early idea of parallel morphology, allows the morphological nominalization to take place either directly of the root *destroy*, or of a structure where functional material introducing an internal argument has been syntactically added. The first option gives the result nominal, the second the argument-structure nominal. There’s no lexical information that is modified by lexical rule; just as in PPRM word formation applies at different points in the syntactic derivation, and the ambiguity is structural, not lexical. Borer’s approach is clearly an improvement in understanding why nominalizations have the properties they do, and why the argument-structure/result dichotomy is so widespread across languages.

The final idea I’ll mention is the notion that syntactic structures can be domains for idiosyncratic word meanings. It is this idea that Borer draws upon in the analysis of the Hebrew compounds discussed above, and, in a looser sense, in the approach to reanalysis. These phenomena raise the question of what the domain is for the assignment of listed, idiosyncratic, semantic content to a piece of syntax. This is taken up and addressed in detail in *Taking Form* and subsequent publications, where Borer develops a number of powerful generalizations relating syntactic structure and semantic content. One of the most striking is that the argument-structure nominals discussed above are systematically compositional, while result nominals are not necessarily so. Take, for example, the noun *government*. This has a compositional reading (roughly, the act of governing) which is forced in those contexts that require an event reading, as in (8a), but there is also an idiosyncratic reading (e.g. a collection of various individuals that have been appointed by a president, or a prime-minister, etc.), as in (8b).

- (8) a. Continual government of an irritated population is difficult.
- b. Governments rarely resign.

Borer (2014) raises the following puzzle: why should the ability to take arguments disallow an idiosyncratic, listed interpretation? That fact doesn’t follow from classical approaches to

nominalization (such as Chomsky's in *Remarks*), where argument structure is associated with a categorially underspecified root, or from Distributed Morphology approaches that in many respects have developed from the ideas in *Remarks*, or indeed from lexicalist theories where nothing about the lexical specifications or lexical rules would lead one to expect such a correlation². Borer's solution again builds on the proposal in PPRM that syntactic operations may apply before word formation, and that word formation may allow an idiosyncratic conceptual content to be associated with the constructed word (as we saw above with Hebrew compounds, or with examples like *coat of arms*). She develops a new theory of how conceptual content is connected to syntactic domains (her theory of *en*-searching). A consequence of this theory is that new conceptual content cannot be added once the lowest functional head in an Extended Projection is merged. The implications and predictions of the theory are too extensive to review here, but, given that in Borer's system arguments must be added via the medium of a functional head (since roots themselves have no syntactically relevant information in them), the generalization about compositionality and argument-structure nominals follows immediately.

These three ideas that took form in PPRM have become part of common syntactic discourse. It is simply impossible to discuss the kinds of phenomena touched on here without reference to them. As I mentioned above, I could equally have discussed Hagit's idea that parametric variation should be confined to inflectional (later, functional) items, or that syntactic licensing requires long-distance structural connection, or that grammatical principles mature, or that unaccusativity cannot be reduced to subject-object relations, or that subject positions can, in some languages, be A-bar positions, or that ...

The ellipsis makes it clear that the contributions that Hagit has made to syntactic theory, and to linguistics more generally, are vast and deep. The range of articles, reminiscences, photos, and letters in the present volume gives a sense of how her research in linguistics, as well as her activism for Palestinian rights, and her deep engagement with others have influenced so many people's intellectual, political and personal lives over the years. What I hope to have done here is just to have given a flavour of just a few of the questions she has found important, and how

²Borer also notes a morphological generalization, that these argument structure nominals are (almost) always based on attested verbs, whereas this is not true for result nominals (like *vision*, *petulance*, etc.). I leave this point aside, as it is not prefigured in PPRM, though it is crucial to Borer's characterization of the information found in roots, and to her way of ensuring that the kinds of derivation available in Generative Semantics models, which also allowed word formation after syntax, are excluded from her system.

she has tackled them from her early work through to now. I hope this ‘sampling approach’ has shown how the sheer creativity and rigour that Hagit brings to her work has led to it having such wide-spread influence and such a central place in current syntactic theory.

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