Towards Semantic Well-Formedness as an Aspect of Grammaticality: Polarity Items, Polysemy, Production and Parsing

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Introduction

As this paper is concerned with the syntax-semantics interface, I will provide a brief history of the modular model of the language faculty. Specific attention is paid to how syntax and semantics have been defined, and how that led to differing models of their interaction.

Since *Syntactic Structures*, three main areas of inquiry in linguistics have been to identify and motivate domain-specific aspects of the faculty of language (henceforth called the narrow faculty of language), to delineate what the exact demands on the faculty of language are, and to determine what those demands tell us about the structure of the mind (Chomsky, 1957). This marked a turn towards viewing linguistics as a cognitive science and focused research on the aspects of human language use which were most likely to be determined by the narrow faculty of language i.e. syntax.

An early standard in syntactic methodology was constraining the linguistic phenomena under consideration using the competence-performance distinction. This distinction was specified in *Aspects of the Theory of Syntax*: competence refers to what the speaker knows and performance refers to how the speaker uses that knowledge (Chomsky, 1965). Performance is often excluded in theories of syntax, justified through reference to Marr's arguments in favor of three levels of analysis for information processing systems in the mind (Marr, 1982). A complete theory of linguistic competence is taken to be a theory at Marr's computational level. Theories at this level should answer "what is the goal of the computation, why is it appropriate and what is the logic of the strategy by which it can be carried out" (Marr, 1982). In the case of language, the goal of the computation is to solve the problem of linguistic creativity: how is it possible that human beings are able to judge a potentially infinite set of linguistic phenomena as well-formed?

Put differently, given an arbitrary element from the set of all phonetically producible sounds, how do humans determine whether that element is well-formed and associate it with some elements from the set of all possible meanings. The generativist solution is that given some possible phonetic form, there is a system that associates that sound with a structure (the syntax), and then according to rules specified by the language that system

also determines if the structure is well-formed. The "goal of the computation" is therefore to determine a structure for all possible phonetic productions and then to determine the acceptability of that structure.

Theories of performance, i.e. production and parsing, are typically taken to be theories at Marr's algorithmic level. This is to say that meaning and sound are considered transformations of a syntactic structure, or representations of inputs and outputs to the syntactic system. This imposes an order on the derivation of linguistic phenomena: first the syntactic derivation and then the association of this structure with some set of sounds and meanings. If the task is production, the sound is externalized; if it is comprehension, the meaning is internalized. As stated in *Current Issues in Linguistic Theory*, "the grammar as a whole can thus be regarded, ultimately, as a device for pairing phonetically represented signals with semantic interpretation" (Chomsky, 1964). This necessarily entails that neither the derivation of semantic meaning nor the production of the phonological form are involved in syntactic derivation.

One issue that must be worked out in this account is that there is no clear operation by which we can map meaning to syntactic structure given a naive account of compositional semantics (e.g. combinations of listemes specified by the order in which they are combined in the syntactic derivation). This can be contrasted with the mapping of sound to syntactic structure, which is typically taken to be a result of a linear reading of the derived structure. The initial response to these issues was to propose deeper syntactic structure to allow straightforward compositional semantics, or to allow a more heterogeneous relationship between syntax and semantics (Partee, 2014). The most influential approach came soon after and is based on the work of Montague. In his work the syntax determines the part-whole structure, the 'forms' of those parts are composed by the syntax, and the meanings of those parts are composed by the semantics (Montague, 2008). The autonomy of syntax is still preserved; however, the syntax no longer plays an explanatory role in determining meaning.

In this paper, I will begin by giving a more precise formulation of linguistic competence, performance and the autonomy of syntax. This will necessitate reanalyzing the Marrian levels previously proposed. I will then show that negative polarity item (NPI) licensing is best explained by a theory that allows involvement of semantics in well-formedness considerations, and that this can be consistent with an autonomous syntax. I will do this by illustrating the shortcomings of current syntactic accounts for NPI licensing, and by providing analysis that the best account for NPI licensing requires semantic consideration. I will combine this with analysis of polysemy to argue that grammaticality judgments should include both syntactic and semantic well-formedness. I will also present the problem of conflicting constituency, Phillips' proposed solution to this problem, and argue that semantic involvement in grammaticality accounts for phenomena not handled by his proposal (Phillips, 1996). The proposed analysis is one in which the semantics can play a role in syntactic derivation, and one in which semantic well-formedness is a constraint that must be satisfied to ensure grammaticality. Semantic well-formedness does not refer to whether a sentence has a meaningful interpretation, or if it is pragmatically well-formed, instead it is determined by adherence to constraints on the composition of types of units of meaning.

In §1 I will provide an analysis of the normal Y-model of interaction between syntax, semantics and phonology given in minimalist accounts (that largely holds for other theories of generative syntax). I will give definitions of the autonomy of syntax that will hold given varying levels of semantic interference, and I will argue that the competence-performance distinction is not clear cut in language. In §2 I will give analysis of current syntactic accounts for NPI licensing that shows that pure syntactic accounts are not sufficient, and I will attempt to give a valid semantic constraint that would be a part of a semantic well-formedness condition in the grammar. In §3 I will present an analysis of polysemy that will motivate a different aspect of the semantic well-formedness condition. In §4 I will present the problem of conflicting constituency, provide an example derivation under Phillips' framework, and show how a reworked version of his semantic condition combined with his derivational proposal provides a better account for the data presented. §5 offers a brief conclusion.

1 High Level Overview of the Language Faculty

In this section I aim to give a more precise account of the typical modular models of syntax, semantics and phonology, and how they may interact.

1.1 A Model of The Language Faculty Under the Minimalist Hypothesis

We can split the faculty of language into two categories: narrow and wide. Under minimalism, the narrow faculty of language, that which is strictly contained in the language module, should be reduced to the system that connects meaning to sound production, and this system should have as few properties as possible to increase the evolutionary plausibility of such a module. With this construction of the language faculty, syntax is taken be the only property of the grammar that is contained within the narrow faculty of language, with phonological and semantic phenomena determined by the interaction of syntax with A-P and C-I (which are two systems postulated to be within the wide faculty of language).

It is assumed that the sound and meaning of some linguistic construction is determined in a two step process. First, by specific the atomic elements of meaning and sound that populate the syntactic terminals generated by the syntactic derivation. Then, by having those elements be parsed in some way, presumably by A-P in the phonological case and C-I in the semantic case. This appears to paint a pretty strict picture of the autonomy of syntax; however there are many possible ways in which the syntax can be considered autonomous, so it is important to define the autonomy of syntax precisely.

1.2 Autonomy of Syntax

Following Croft, we can define the following levels of autonomy for the syntax (Croft, 1995):

1. syntax is arbitrary and self-contained (AUTONOMIST FUNCTIONALISM)

2. syntax is arbitrary, but not self-contained (TYPOLOGICAL FUNCTIONALISM)

3. syntax is not arbitrary or self-contained (EXTREME FUNCTIONALISM)

The autonomy of syntax notably should not be taken to mean that syntax has no possible effect on meaning and vice-versa, even in strict generative syntax. This extreme position on autonomy has been attributed to generative syntax in the past: "Chomsky argues for a kind of autonomy of syntax that would cut it off from the pressures of communicative functions. In the Chomskian vision, language is pure and autonomous, unconstrained and unshaped by purpose or function" (Bates & MacWhinney, 1989). This extremely strict formulation of the autonomy of syntax is not implied by the above formulation of the Y-model (in fact, in attempting to make the narrow faculty of language as sparse as possible Chomsky commits himself to meaning having a tremendous effect on syntax, just not on the derivation of syntactic structure).

To show the insufficiency of there being some semantic representation of the facts that the syntax appears to encode in denying autonomist functionalism we should consider a toy example where we posit a syntactic feature that encodes for question constructions (Ramchand, 2021). Such a feature could only be considered as a possible violation of the autonomy of syntax if it could be comprehensively dictated by some constraint on the meaning of the linguistics constructions it is involved in deriving. It appears as though the only plausible candidate for such a constraint is that the linguistic construction results in an interrogative semantic form, or a questioning speech act. If we consider that question constructions do not necessarily entail a questioning speech act such as in (1-a), and that questioning speech acts can be associated with syntactic structures not associated with the posited question feature such as in (1-b), it is clear that the autonomy of syntax can be preserved.

(1)   a.   Can pigs fly?
        b.   You really spilled the milk again?

Most generative theory respects autonomist functionalism, which is to say that meaning is not taken into account in the syntactic rules and operations of a language. Some generative work (such as (Phillips, 1996) and (Homer, 2021)) takes the typological functionalist view. Under this view the faculty of language is still a module in the Fodorian sense, however syntax is no longer explanatorily autonomous for judgments of grammaticality (Fodor, 1983). This view notably violates the Y-model.

It is also possible to remove explanatory autonomy from the syntax without violating the autonomist functionalism or the Y-model. This would be accomplished by assuming that the syntax and semantics both have well-formedness conditions. These conditions are both taken to be necessary but not sufficient, and it is possible that they occur in parallel, or one after the other.

1.3   Competence vs. Performance

Any complete theory of linguistic competence must specify what the interaction between competence and performance is, as the only access linguists have is to performance data (that which has not been parsed can not be judged). Without specifying what occurs during

this transformation, it is entirely possible that the structural data that is being accounted for is actually a result of some performance effect that is robustly reproduced even in the most perfect performance settings.

Although it is often claimed that through internal grammaticality judgments the researcher has access to competence, even in the earliest formulation of the distinction in *Aspects of the Theory of Syntax* this is not proposed: "Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance" (Chomsky, 1965). It is clear that the concern of linguistic theory is in analyzing so-called 'perfect performance' not competence. This means that appealing to Marr's levels is less obviously acceptable, as we know that any theory of linguistic competence must necessarily also take algorithmic considerations into account.

This is perfectly sensible, as there are many reasons why performance, even in non-ideal conditions, should influence our decisions regarding a competence theory. Firstly, our theories of competence should be limited by the possible algorithms implementable by the mind's neural substrate. This is to say that a competence theory that necessitates algorithmic implementations like memorizing all possible grammatical utterances, or proof checking at every stage of syntactic derivation should also account for how these algorithms could be plausibly implemented in the mind. Secondarily, if we assume that our ability to comprehend and produce language is heavily tied to our grammatical competence, then we expect that we must be applying our grammar every time we produce and parse. It is possible to imagine syntax that is embodied without being usable by our production or comprehension systems, but it seems dispreferred if the alternative remains viable.

2   NPI licensing

This section aims to describe the (non-)veridicality theory of NPI licensing, and its potential syntactic implementations, then show how without semantic consideration these implementations are not sufficient to account for the available data, and finally show how a semantic constraint accounts for the relevant data.

2.1   Veridicality

We define the veridical stance "as the mental state (or, attitude) of commitment to truth. This is not commitment in the sense of commitment to act; veridical commitment is independent of action since it relies purely on knowledge and belief. The veridical stance is commitment to truth motivated by information that the speaker possesses that we will call the body of evidence" following (Giannakidou & Mari, 2020). It follows that any downwards entailing statement is non-veridical.

2.2 Veridicality in Operator, Environment, and Sub-environment Based Accounts

Some possible accounts for syntactic licensing of NPIs are operator theories, environmental theories and sub-environmental theories. "Operator-based theories state that an NPI must be c-commanded by or within the semantic scope of at least one DE operator to be licensed. Environment-based theories, as their name suggests, state that an NPI must be located in an environment that is DE with respect to its position. Finally, sub-environment approaches begin with an environment-based framework to NPI licensing and add additional constraints, such as syntactic licensing domains" (Wurmbrand et al., 2017). The following sentences are taken from (Wurmbrand et al., 2017) and are predicted to be grammatical or not depending on the chosen syntactic implementation. The validity of *doubts*, *didn't* and *doesn't* as NPI licensers is experimentally established in (Wurmbrand et al., 2017).

(2)   a.   Jeff [doubts that the artist [didn't have any pride in the painting.]]
        b.   Jeff [doesn't think that the artist [didn't have any pride in the painting.]]
        c.   Jeff [doesn't doubt that the artist [had any pride in the painting.]]
        d.   Jeff [doesn't doubt that the artist [didn't have any pride in the painting.]]

An important consideration when dealing with English *any* is to ensure that *any* is not taking the form of a free choice item (FCI). These sentences were specifically constructed using abstract mass nouns so that *any* can not be read as a choice among a set of alternatives following (Parker & Phillips, 2016). Contrasting the unacceptability of (3-a) with the acceptability of (3-b) we see that abstract mass nouns remove the FCI reading that allows *any* to be acceptable without a licenser.

(3)   a.   *The climbers felt any fear during the expedition.
        b.   No climbers felt any fear during the expedition.

An operator based approach should find that (2-a), (2-b), (2-c) and (2-d) are licensed. It is specifically differentiable from a sub-environment based approach in cases like (2-c) where the NPI licenser c-commands the NPI, but there is no NPI licenser in the sub-environment (Homer, 2021). The study showed a significant decrease in acceptability for sentences like (2-c) (neg-doubt constructions) when they contained NPIs, which are predicted to be acceptable by operator based accounts. The study also showed no significant difference in acceptability in constructions (neg-neg constructions) like (2-a) when an NPI was included in them, which is not predicted by an environment based account as the global environment is upwards entailing.

2.3 Implementation of Veridicality

If rather than downwards entailment (DE) we take veridicality to be the quality of the licenser that determines acceptability of NPIs the distinction between sub-environment and environment must be differentiated in a different way. This is because combining two non-veridical operators doesn't necessarily determine a veridical environment. In the case of

(2-a), an environmental approach that takes veridicality into consideration is still valid, as this sentence is not veridical given the definition above. It should be noted that it is possible that two non-veridical operators will combine to produce a veridical sentence, otherwise veridicality based theories of NPI licensing would have no way to account for the unacceptability of sentences like (2-c). (2-c) is veridical as the sentence represents a commitment to truth about Jeff's beliefs.

When using veridicality as our operator we can differentiate between an environmental account and a sub-environmental account if we pick our veridicality operators such that when they combine they result in a veridical sentence. We will illustrate this using sentences where depending on the order of composition the sentence is veridical or non-veridical. The following examples illustrate that the order of veridical operators is relevant in the licensing of *any*:

(4)   a. *He doesn't always feel any doubt.
        b. He always doesn't feel any doubt.
        c. He doesn't always feel hungry.

Comparing the unacceptability of (4-a) with the acceptability of (4-b) it is clear that the order of composition of veridical operators determine if they result in a veridical or non-veridical reading of modified proposition. (4-c) is given to show that this judgment is not a result of a restriction on the ordering of *doesn't* and *certainly*.

Sub-environment approaches tell us that polarity item licensers function by licensing if there is some valid environment in which the polarity item is licensed. These approaches predict that in cases where there is licensing in the sub-environment but no licensing in the global environment we still get polarity item licensing (such as in (2-b)). Consider the following pair of sentences:

(5)   a. [They didn't think that he [always felt any doubt]]
        b. [They always thought that he [didn't feel any doubt]]

Notably, (5-a) seems unacceptable whereas (5-b) seem acceptable. This indicates that a sub-environmental approach is superior to an environmental approach (as the sub-environment under consideration can be either the global environment, or some local environment, accounting for the fact that veridicality does not necessarily change as a result of veridical operator composition).

As proposed by (Homer, 2021), sub-environments are specific environments that are decided when operators that encode veridicality are introduced. If the only evidence we had was for environmental approaches, then we could maintain the autonomist functionalist position by assuming that veridicality is computed after the syntactic derivation is complete, but in this case it seems there must be structure that allows for veridicality to be computed within specific constituents. Given the above analysis, the most comprehensive account of NPI licensing appears to be a semantic constraint on veridicality of sub-environment. The specific suggestion given in (Homer, 2021) applied to veridicality operators would be for veridicality operators to reside in a Polarity Phrase, and that these PolPs are checked for

the acceptability of the PIs they contain.

2.4 Veridicality-Specific Evidence

In order to ensure that veridicality is the correct semantic quality that determines NPI licensing, we should find an example where the only difference between licensing is veridicality or non-veridicality. These cases are possible given that downwards entailment is a strict subset of veridicality. The following sentence differs from it's counterpart only in it's veridical commitments:

(6)   a.   She resolved any doubts.
        b. *She did resolve any doubts.

The only difference between these two sentences is the inclusion of an operator that guarantees veridicality when applied to propositions (*did*). The acceptability of (6-a) contrasted with the unacceptability of (6-b) provides evidence towards the claim that non-veridicality is the correct semantic constraint involved in determinations of NPI licensing. This pair of sentences is especially problematic for operator-based accounts as there are no possible operators, and as the nominal is an abstract mass noun there is no possibility that *any* is an FCI.

3 Polysemy

This section aims to motivate the necessity of a semantic well-formedness condition using data largely taken from Omer Preminger's talk *Natural language without semiosis* (Preminger, 2021).

3.1 Systematic Polysemy

Systematic polysemy proposes a significant difficulty for models of language that view syntax as providing terminals that bring together some syntactic information with some minimal elements of form and meaning (Preminger, 2021). This is because in cases where we use the same lexical item but with two different highly related senses we are either forced to assume a flexible semantics that becomes clear depending on the syntactic parse, or two homophonous lexical items that have different syntactic distribution, consider (Preminger, 2021):

(7)   a.   This window is double glazed-glazed and has a magnificent view.
        b.   This book is old and crumbling, but will captivate you like no other.

But we also get cases like the following, where even though the sentence is syntactically well-formed like (7-a) and (7-b), it appears ungrammatical.

(8)   a. *This bug can crash your phone and cause a rash.

The difference between the polysemy in examples (7-a) and (7-b) and the polysemy in (8-a) can be accounted for by a semantic condition evaluated when the TP has been fully merged, rather than proposing a limited syntactic distribution for the acceptable forms of polysemous meanings of *bug*. (8-a) would be accounted for by fixing the extension of *bug* after the first predicate, which would make the second predicate ill-formed semantically (requires an animate subject, but receives an inanimate subject). The extension of the first predicate in (7-a) and (7-b) is compatible with its second predicate, hence no such issue arises.

4 Conflicting Constituency

An important problem in syntax is explaining why the faithful application of constituency tests leads to contradictory results (henceforth referred to as the problem of contradictory constituency). Tests like VP fronting, ellipsis, pronominalization, and coordination seem to point towards a left branching structure, whereas tests concerning c-command seem to point towards a right branching structure.

Resolving the problem of contradictory constituency is key if one wants to maintain the hypothesis that sentences all have a single constituent structure or derivation, what Phillips calls the *Single Structure Hypothesis* (1996). Accounts of contradictory constituency that do not take the single structure hypothesis include positing multiple parallel phrase structures (Pesetsky, 1996), or allowing for flexible constituency, such as in enriched categorial grammars (Steedman, 1985).

Phillips proposes an alternative solution to the problem of contradictory constituency that preserves the *Single Structure Hypothesis*: a principle he calls *Merge Right* which requires that new material always be attached to the right edge of a structure (1996). Using *Merge Right* we get a top down derivation, which unlike typical bottom up derivations can destroy constituents during the derivation. These intermediate constituents that are destroyed will be the basis for Phillips' account for contradictory constituency (along with positing a preference for right branching structures).

Focusing on VP fronting, I will show that his first proposal accounting for the ineligibility of non-left edge constituents of the VP for movement, and his second proposal accounting for the ineligibility of complements of double object structures, arguments or adverbial phrases to be split up by movement to be insufficient for accounting for all immovable intermediate constituents.

I will then argue that a semantic condition provides a better account for the data presented, and builds towards a resolution of the other tests that contribute to the problem of conflicting constituency.

4.1 Constituents: Intermediate and Immovable

In this section I will give an example sentence, show its full derivation under Phillips' framework, from which I will derive all possible constituents at any point during the derivation. I will then use VP-fronting tests to show which of these constituents can not be moved.

4.1.1 Constituent Derivation

Let's take the sentence:

(9)   John gives candy to children in libraries.

Let us first give a complete left to right, top down derivation of the complex VP of this sentence:

(10)   a. $[_{V(P)}$ give$]$
       b. $[_{VP}$ $[_V$ give$]$ $[_{DP}$ candy$]$ $]$
       c. $[_{VP}$ $[_V$ give$]$ $[_{PP}$ $[_{DP}$ candy$]$ $[_{P(P)}$ to$]$ $]$ $]$
       d. $[_{VP}$ $[_V$ give$]$ $[_{PP}$ $[_{DP}$ candy$]$ $[_{P'}$ $[_P$ to$]$ $[_{DP}$ children$]$ $]$ $]$ $]$
       e. $[_{VP}$ $[_V$ give$]$ $[_{PP}$ $[_{DP}$ candy$]$ $[_{P'}$ $[_P$ to$]$ $[_{PP}$ $[_{DP}$ children$]$ $[_P$ in$]$ $]$ $]$ $]$ $]$
       f. $[_{VP}$ $[_V$ give$]$ $[_{PP}$ $[_{DP}$ candy$]$ $[_{P'}$ $[_P$ to$]$ $[_{PP}$ $[_{DP}$ children$]$ $[_{P'}$ $[_P$ in$]$ $[_{DP}$ libraries$]$ $]$ $]$ $]$ $]$ $]$ $]$

This derivation differs from the derivation given in Phillips' paper, as we do not add the PP using a copy of the verb *give*, and instead add the PP as shown below. Phillips uses a copy of *give* as it satisfies the *Configuration for Arguments and Predications* given on page 30 of Phillips 1996, and is more right branching, so it is preferred by *Branch Right*, the condition given on page 29 of Phillips 1996, but as the constituents derived are the same, we will avoid using copies of *give* and use the simpler derivation Phillips' proposes.

In this derivation, we begin by introducing the verb (the leftmost element of the complex VP), and then adjoin to the right. Constituents are any elements that are enclosed by brackets at any point in the derivation.

4.1.2 Immovability tests

From this list, we will test for immovable constituents using VP fronting:

(11)   a.   John intended to give candy to children,
            ... and [give candy to children] he did __ in libraries.
       b.   John intended to give candy,
            ... and [give candy] he did __ to children in libraries.
       c.   #... and [to children] he did __ give candy in libraries.
       d.   *... and [give] he did __ candy to children in libraries.
       e.   *... and [give candy to] he did __ children in libraries.
       f.   *... and [give the children] he did __ candy in libraries.

The four ungrammatical examples cleanly split the immovable constituents in our list. Firstly, we have the class of constituents that are not left-edge (they do not start with give) such as (11-c). Once we have removed all constituents that do not start with give, we have the class of constituents that are left-edge but split the argument (11-d), the adverbial phrase (11-e), or a double object construction (11-f). It should be noted that under Phillips'

account, after the left edge of the VP has been constructed strings like *candy to children* should be movable (as they are valid constituents), but they are not. This is outside of the scope of analysis for VP fronting as the only constituents considered for movement are verb initial constituents, but is nonetheless interesting.
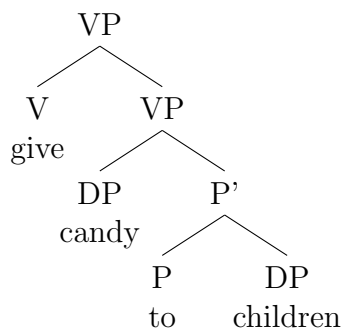
4.2 Phillips' Accounts for Immovable Constituents

In this section I will outline Phillips' proposals for why each class of intermediate constituent can not be moved.
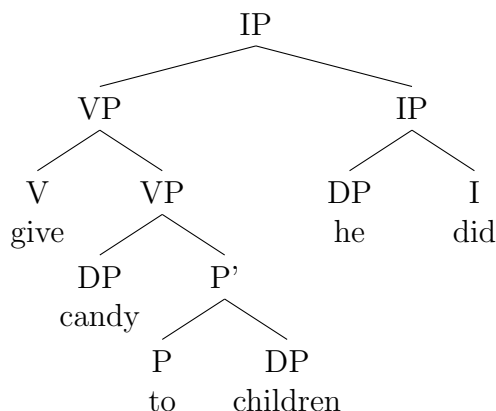
4.2.1 Proposal 1: Left-edge Requirement

Phillips' account as to why non left-edge constituents like (11-c) can not move is the following: movement occurs after these constituents have been created, but they must be created left to right, so non left-edge constituents aren't valid. The following is a derivation of (11-a) that will illustrate how Phillips' accounts for VP fronting. We start by building the fronted portion left to right:

(12)   a.   ... and [give [candy [to children]]]

```
            VP
          /    \
         V      VP
       give    /  \
             DP    P'
           candy  /  \
                 P    DP
                to   children
```

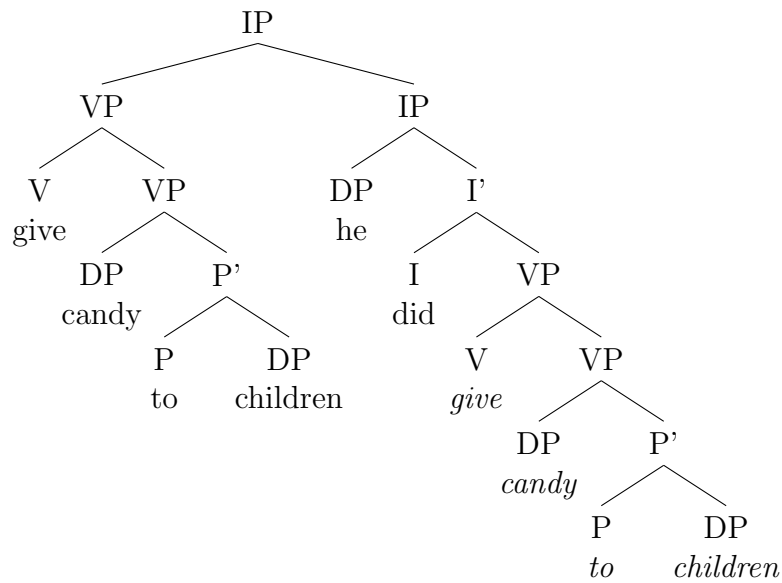Then we will add the inflectional phrase *he did*:

(13)   a.   ... and [give [candy [to children]]] he did

```
                    IP
                 /      \
              VP          IP
             /  \        /  \
            V    VP     DP    I
          give  /  \    he   did
              DP    P'
            candy  /  \
                  P    DP
                 to   children
```

11

Then we will add a copy of our fronted VP is inserted as a complement of I:

(14) a. ... and [give [candy [to children]]] he did [*give* [*candy* [*to children*]]]

```
                          IP
                  _____|_____
                 VP                IP
              ___|___           ___|___
             V      VP         DP      I'
           give   __|__        he    __|___
                 DP    P'             I     VP
               candy  _|__           did  __|___
                     P    DP              V     VP
                    to  children        give  __|___
                                            DP      P'
                                          candy    _|__
                                                  P    DP
                                                 to  children
```

Finally we will add the remaining PP to the right of the VP, which will destroy the constituenthood of *give candy to children*, but we will have already done our movement, which makes this constituent being destroyed irrelevant.

(15) a. ... and [give [candy [to children]]] he did [*give* [*candy* [*to* [*children* [on weekends]]]]]
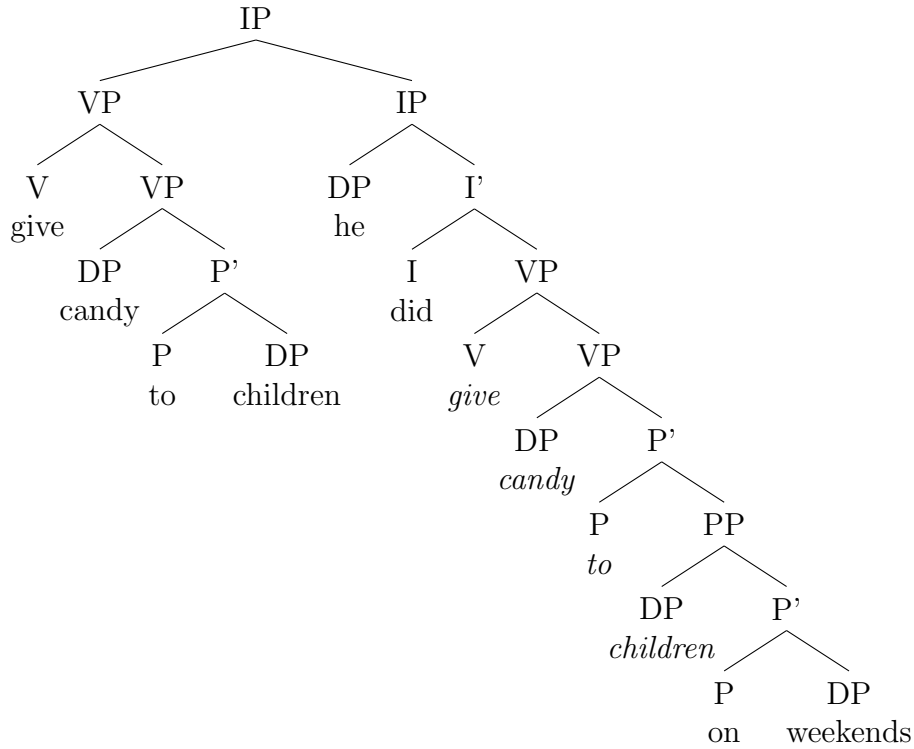
Under this derivation of VP fronting, we construct the fronted element first, and then we move that element. This would not be possible to do unless we began with the verb, as we derive left-to-right, which eliminates any non-left edge constituents from this type of movement. This derivation accounts for immovability in cases like (11-c), but does not account for cases like (11-d), (11-e), and (11-f).

4.2.2 Proposal 2: VP-Completeness

Phillips' account for cases like (11-d), (11-e), and (11-f) is that candidacy for VP fronting has an additional requirement: being a potential complete VP. While he does not provide a reason for this restriction on VP fronting, he does note that the initial conjunct would be of an obviously unacceptable form for these sentences. Taking (11-d) and (11-e), their full forms would be:

(16)   a. *John intended to give, and give he did candy to children in libraries
         b. *John intended to give candy to, and give candy to he did children in libraries

While (16-b) and its initial conjunct are unacceptable, the initial conjunct for (16-a) seems acceptable (*John intended to give*), which seems related to give being ambitransitive. This is further explored in the next section.

4.3 Unaccounted for Immovable Constituents

In this section I will provide example sentences that show these proposals are insufficient in accounting for all types of immovable constituents. I will also show that we have good evidence that these really are constituents.

4.3.1 Ambitransitive Verbs

The following sentences are intended to illustrate the inadequacy of the *potential complete VP* condition. This condition specifies that verb phrases can only be fronted if they are possible as complete VPs. It should be noted that in Phillips' proposal this condition is clearly defined as a "construction specific semantic condition" (Phillips, 1996). (17-a) is the sentence that will have its VP undergo VP fronting. In (17-b) we see that fronting *bake a cake* is not grammatical. In (17-c) we see that the fronted portion is a valid complete VP. We contrast with the sentences given in (18-a) and (18-b) given by Phillips where the VP completeness condition applies.

(17)   a.   John baked Jim a cake.
            b. *John intended to bake Jim, and bake Jim he did a cake.
            c.   John baked a cake.

(18)   a. *John intended to give the children, and ...
            b. *... and [give the children] he did __ candy in libraries.

This seems straightforwardly unaccounted for by Phillips' theory. These are intermediate constituents that are clearly left-edge, and are clearly potentially VP complete, but they are immovable. The following sentences use coordination as evidence that the constituents attested above really are constituents:

(19)   a.   John baked Jim a cake and threw Jerry a ball.
            b.   John baked Jim and ate him.

A potential account for the immovability of constituents of this type would be to assert that semantic well-formedness is evaluated when the TP has been fully merged. We know that *bake* accepts two arguments, and our VP movement is allowed by the left-edge constraint, however when the sentence is evaluated the right conjunct has too many arguments as after *he did* bake no longer accepts any arguments. The sentence is therefore determined to be ungrammatical on semantic grounds, and the constituent is not considered immovable, remaining consistent with the left-edge constraint given above. This condition also accounts for cases like (18-a) and (18-b). In these cases the left conjunct would not be considered semantically well-formed as *give* does not have its required arguments satisfied.

5 Conclusion

This paper presents some evidence and arguments in favor of semantic consideration in grammaticality. The full description of what semantic well-formedness would entail is not given, but arguments are given that support specific semantic constraints or conditions that appear necessary for accurate grammaticality judgments within the context of NPIs, polysemy and constraints on movement in a right-branching syntactic theory.

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