The nature of the input: Tracing INFL through the Dual Mechanism Model of Language Development

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1. Focus points:

• We accept as a point of departure B&R's analysis showing clear asymmetric development between [*stem* + *stem*] formations on the one hand, and [√*stem* + *affix*] formations on the other.
• Contrary to B&R however, we propose an alternative account of the asymmetric development in terms of a developing DMM. We focus primarily on the first instance of PF spell-out (**PF[1]**).
• INFL-related implications surface within the account as do notions of Merge v. Move [1, 2]:

(i) We speculate (*ad hoc*) that *Merge-*$_{\alpha}$ may be the sole operation that involves lone 'external movement', whereby only √roots are involved and not phrase markers: merge x + y.

(ii) We thus extend a definition of *Merge-*$_{\beta}$ as being more in line with the properties of *Move* ('internal movement/recursion') whereas this 'true' movement operation involves both phrase markers as well as the processing of *copy* and *delete* (leading to correct word order for non-trivial complements (Double Argument Strings): => *Merge-*$_{\alpha}$ + *Merge-*$_{\beta}$ (movement) + copy (+delete, trace) + form chain**.** Only *Merge-*$_{\beta}$ provides recursion out of local domain.

• We review the Data which show [3, 4]:

(iii) A Non-INFL / Non-Paradigm forming stage (e.g., non-genitive structures, DP-shells [8]).
(iv) Stem v. affix guidance toward PF spell-outs (respectively).

(v) Early *determiner spreading* instantiating a default predicate DP>$_{VP}$.
(vi) Implications of mixed word order for non-recursive 'Single Argument Strings' (SASs).

2. Opening remarks:

It is intuitive and quite worthwhile to think about the DMM as a potential structure-building model for language acquisition. Perhaps some of us have been doing so all along, but I think we can be much more explicit in our modeling of how the brain/mind-language relation intervenes in child language development. A delimited lexical source is necessary for development [5, 6].

3. Abstract

B&R show how, by delimiting (in some way) the child's ability to build paradigmatic formations (a product of the Computational System (CS) of the Language Faculty)[1], we can account for the obviously incremental nature of child language development—viz., the universally attested accounts of the absence of Functional categories/Inflectional features observed in early stages of child speech. By extension, and congruent with these insights, we propose an alternative account suggesting that the Dual Mechanism Model [7], though originally slated as an adult morphological process, can be reinterpreted as a more precise and biologically determined mechanism which can guide the CS in such delimited ways, consistent with the attested the non-inflectional stage-1 found in the study. It is natural that the focus of inquiry here should be held on regular INFL-affix formations, since they constitute the core elements open to a DMM analysis. While the models herein are biased towards regular formations, irregular formations are similarly taken in the model to be products of movement and so are equally open to much of the same analyses presented in the paper. Though, there could be an observable disparity in the early data amongst delayed onsets of (i) (*bound*) INFL-morphemes relating to (*non-root*) features and early onsets of (ii) (*free*) Functional items related to (*word*) categories. In fact this shows up in my data with the early appearance of Determiners in the otherwise Non-INFL stage. We

[1] We term CS in a general way as defining a heuristic searching procedure. B&R (=Borer and Rohrbacher).

hypothesize that such early onset of the Determiner category (termed herein as DP-shells [8]), rather takes on the role of satisfying the conditions placed on *phonological spell-out*, resulting in the truncated projection of a vacuous DP-shell, empty of its INFL-related features. Hence, 'merge-α stage' occurrences of the determiner '*the*' surface as **default roots**. In addition, there is nothing in our model to suggest that irregular formations should somehow be attested in the data earlier than regular formations (under the 'incorrect' pretense that irregular are simply memorized chunks). In our current model, irregulars are not idiomatic chunks but are indeed stem+affix formations (similar to regulars) since both are treated equally as deriving an INFL-based movement analogy.

4. Some points on B&R and a DMM Response (italics belong to B&R).
(1). *In the absence of a pre-existing notion of grammatical tense, it is hard to see why a child would be driven to segment a phonological string into a lexical stem and a discrete tense morpheme*. Hence, paradigm building can only be motivated by internal processing.

(2) The notion is specifically addressed in Cartesian fashion (*Meno's paradox*) and questions the nature of knowledge the child has in order to separate *stem* from *affix* from the earliest of possible syntactic stage of development. Two year old children are not *idiom seekers*.

(3) It would seem that the child must at least know (*a priori*) the stem before she can then engage in a dual-track process by which ambient sound separation of the morpho-phonological distinction attributive to past tense is carried out, say, between the paradigmatic representation of the English word *play vs. play-ed* (a dual processing which provokes separation of the √*play* stem and the {*ed*} affix). A 'Words 'then' Rules' developmental approach [7].

(4) Otherwise, absent this knowledge, it becomes quite convincing for the young child that the pair *play-played* should represent altogether two different lexical stems, and, stored as such, reflect two distinct though relatively similar semantic notions (a single processing). In similar fashion, the two items *speaks* and *dance* could be equally misinterpreted by the child as either (i) partaking in similar morphological stem+affix processing (*speak-s, *dan-s*), or that (ii) neither are composites (**speaks, dance*).

(5) *If an English-speaking child could freely ignore all tense and agreement inflection on 'dances',*(as predicted by the Discontinuity/Gradual Development Hypothesis) *then she should treat (*what's found in the ambient input) *the inflected form 'dances' a par with the bare stem (or the root infinitive)…Thus it appears that the child's knowledge that 'dances' and other finite forms are inflected, together with her inability to associate any fully specific features with this inflected form and with finite forms in general, leads her to avoid finite verb forms altogether*.

(6) Assuming the lexical item *dances* does enter into the input to be processed, since, following Chomsky [1], all *inflected forms are, fundamentally,' lexical', in that they are part of the knowledge about the morpho-phonology of a given entry*, how are we then to credit the child with such 'pre-existing' knowledge that enables her to look for and tease apart INFL markers in the input—given that for B&R, no random errors exist for the normally developing child (errors, in their interpretation, would provide evidence for no such knowledge)?

(7) The fact that such structures (e.g., *@speak-s*, **dan-s*) do not project at the Non-INFL stage suggests that the child 'knows' of an IP and that its projection is required in order for the affix to project and be checked. (For B&R, this is the nature of such pre-existing knowledge).

(8) We believe the DMM modal shows just how the child comes to know to search for an IP. Such knowledge can be cast in the following way:

(i) The child 'knows' about the compositionality of [stem + affix] formation since the full-fledge DMM inherently separates these structures in different modules leading to the CS. In other words, knowledge of an absent affix is directly correlated to knowledge that the stem doesn't include the affix, constituting a kind of negative knowledge. This then can account for the fact that the child doesn't build an otherwise potential paradigm which would include e.g., the pairs *@speak* (v. *speak-s*) and *dan* (v. *dan-s*) (building from a retrogressive paradigm). Children have tacit knowledge (positively or negatively manifested) of stem+affix recursive XP theory since it makes up part of universal UG.

(ii) Hence, full X-bar theory is given free as a UG/language faculty principle. The fact however that children my not have full recourse to spec-head-comp XP is a result of a lack of recursive operations at merge-α (and not a result of any ignorance of XP).

Recursion begins at merge$_{-\beta}$ as a result of DMM compositionality expanding first order [stem +stem] formations into [stem + affix] formations.

(iii) This fully operational DMM is a reflex of both *declarative* (temporal lobe) and *procedural* (frontal lobe) processing in the brain Recursion is a frontal-lobe activity and may be what makes language special [9, 10, 18].

(iv) It follows that such inherent knowledge naturally dispels any notion calling of an initial single mechanism model. Such a single mechanism model would be hard pressed to simply dismiss all phenomenal treatments of the morpho-syntactic development of affixes in young children as a residual effect of frequency of adjacency (*pace* [6, 19]).

(v) Given Chomsky's interpretation here, it may be that children 'know' (*a priori*) that inflected forms are not (do not include) lexical stems since such forms are represented and generated in a separate mode of computational processing which via a modular processing distinction, inherently disassociate *stems* from *affixes*: (*stems* being tagged and represented by (broad) 'sensorimotor skill' components of the Computational System (CS) (perhaps pinned to the VP, and being guided toward a PF spell-out), and *affixes* being tagged and represented by the (narrow) 'recursive/rule-formation' component of CS (perhaps pinned to IP and being guided toward an LF spell-out) [18]. So whereas the item comes fully inflected via the input (what we term 2nd-level input), as expressed via the modal, the actual child's salient 0-level input does not have the capacity to map onto and thus represent the IP (and its component structure). It could be argued that checking theory still must motivate movement of the entry up the tree, thus signaling feature-based morpho-phonemic separation.

(vi) Likewise, the DMM, as it involves movement analogies, is indeed syntax *per excellence* given that movement/inflection must be a residual effect of morphology. We strongly debunk any notion that the DMM has no impact on syntax—particularly in how it has been exclusively slated as a mere adult morphological process. Indeed, the DMM impacts syntax in a number of ways, especially in ways pertaining to recursion and movement.

(vii) The proposal here is predominately 'top-down' given that it is ultimately the functioning of CS that ultimately determines how words and affixes get decomposed and processed.

(viii) We follow Chomsky's assumption above with the added caveat that verbs may enter into a 1st level input (a state of CS) in which INFL-features have yet to be internally represented—in this case, only the PF representation of the verb would pass without the required INFL material required for checking. (See Modal below for PF/LF spell-out).

(ix) In past interpretations of the DMM, such a 1st level input might have been assumed for irregulars since their rote-learned formation was thought of as being (non-productive) phonological idioms without inflectional material. We believe this is not the case and that *irregulars* and *regulars* alike enter into INFL-related agreement relations with their appropriate functional heads and both require movement. The classic distinction leveled against regulars vs. irregulars therefore must be subsumed at a different level of processing (at the phonological word-formation level rather than at the syntactic level)—a matter we turn to next.

(x) We believe there are two word formations we call **'out-of-root' formations** (or **exit strategies**):
(i) √**roots** (which may be represented as Bare Stems) → Merge-α

and

(ii) **complex words** (which are √roots plus vocabulary insertion) → Merge-β

In turn, there are two types of complex words as generated via **Vocabulary insertion**:

(i) **Rule-generated** (as spelled-out in the phonological default past tense [past, {ed}] → [√verb + ed] (e.g., *visit-ed*).

(ii) **List-generated** (as spelled-out via the searching of a particular stem to match of appropriate phonological affix) [past, {t}] → [√verb + t] (e.g., *wen-t*).

(Over-analogies of *ring>rang>rung* to **bring>brang>brung* are therefore *phonological* products of an ill-formed list-generated formation).

Otherwise, the model makes do distinction in processing between regular and irregular formations. (See §39 for Spanish example of rule-generated vocabulary insertion, and see §40 for list-generated insertion).

In summary, what we first have are roots which can merge with one another forming sister-to-sister relations (VP dominated phrase structures—*me dolly, him talk*). After the first sequence of merge is finished, extracting the root in forming a derivation as driven by a functional head, move then follows in allowing stem+affix formations (IP dominated structures—*my dolly, He talks*). The classic distinction between lexical vs. functional word categories and regular vs. irregular morphology no longer is applicable to our model.

Regarding what we are on about concerning the very earliest stages of child multi-word speech, the model only is concerned with processing distinctions dealing with a root vs. a complex word. And, it is at this very earliest of stages of multi-word speech that we find the interface DMM restricting the child's access to functional INFL-related material, leaving the child to form prosaic root formations without recourse to INFL-related morphology or movement.

5. The Model: Tracing the INFL {s} affix at PF.

(9) Input^{0} => [√walk + {s} /wa:ks/]

↕

(CS)

Fodorian Modules (CS)

↕ (Brain-language self-referential loop)

1. **DMM processing** (DMM)

stem + stem → Merge-α applies only for roots.

| | Input^{1} Output^{1}

2. **Derivation #1** √walk → √walks → [Lexical Source] → [spell-out] → [**PF^{1}** [walk, walks]]

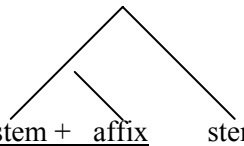
↓

{affix}

{s} → Merge-β (recursion) applies for phrase markers.

↓ Input^{2} Output^{2}

3. **Derivation #2** I^{max} → [Lexical Source] → [spell-out] → [**PF^{2}** [walk-s]]



Full DMM stem + affix stem

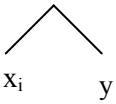
V +INFL V^{max}

walk$_{i}$ {s} √walk $_{ti}$

6. Merge v. Move: possible implications to INFL-relation and Word Order

(10) **Merge-α** X' → Merge-α applies only for roots. → **No Recursion**

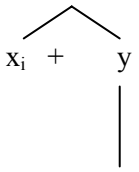
(a)



This is a first approximate numeration which involves a local relation between {x , y} whereby both form minimal and maximal projections (there are no other outside conditions which must be satisfied by the arrangement). We would predict both [-AGR] as well as Mixed Word Orders for such trivial 'single terminal complement' nodes: (SASs surface here due to the lone operation merge). We note that earlier attempts in the literature which called for 'non-compositional' (stage-1) 'flat tree structures' would be consistent only with this level of non-movement, at least in regards to there being no recursion [16]. We normally speak of only two items merging here.

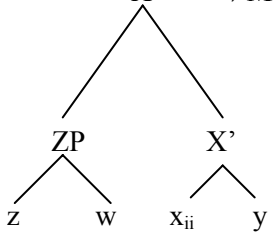
(11) **Merge-β** X' → Merge-α (copy + merge (delete) trace of x_i) → **Recursion**

(b)



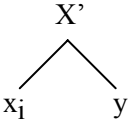
X^{max} → Merge-α takes X'(movement) → **Merge-β**

(c)



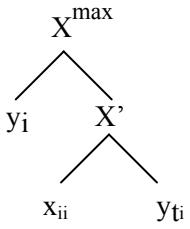
The properties of Merge-β are consistent with a 'copy theory' of movement and compositionality.

(d) Merge-α



{x, y} are necessary arguments of one another

(e) Merge-β

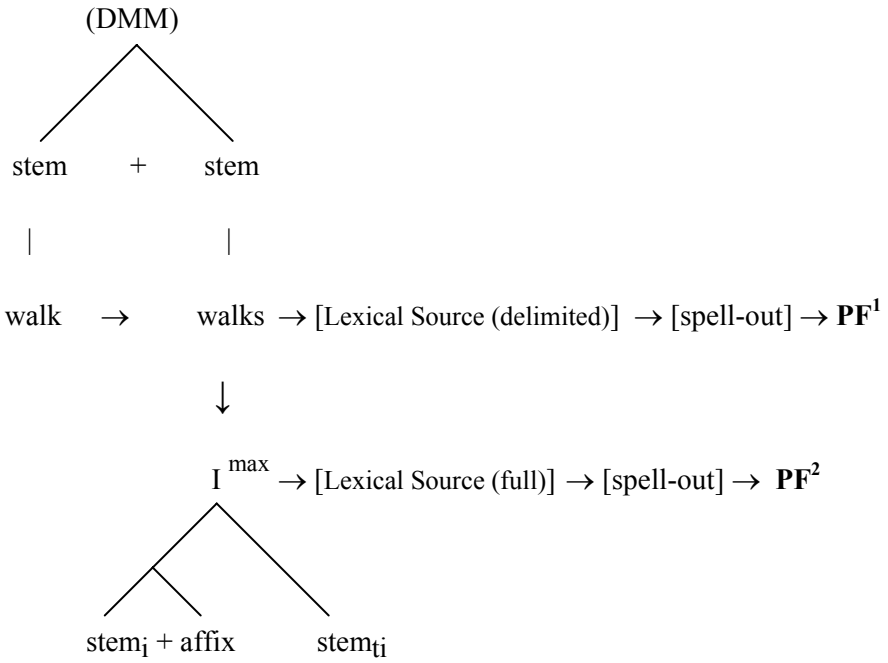


{y} then raises leaving a copy of itself

(12) Language variation is based on what is 'visible' to the child in a given state of grammar.

At Merge-α , only default universal properties of roots are visible based on substantive/lexical categories, +Interpretable features, and a truncated X-bar hierarchy yielding non-categorical terminal distinctions. Movement operations are inoperative to establish 'Agree' rendering a non-INFL [22]. Given the lack of hierarchy, both {α, β} are sisters and thus have no category terminal distinction, allowing for free word order. Hierarchy allows for merge-β: its recursive nature may be seen as fixing word order based on a three-tier (local plus elsewhere) hierarchy [1, 12]. This process is viewed as being analogous to the DMM structure discussed above restated below:

(13)



Steps leading to the derivation:

(14) **Derivation #1.** Input^0: An immature (CS)/partially developed DMM

Input^0 is zero-level input and doesn't provide as a direct lexical source for the child. Thus, *Poverty of stimulus* is built into the system. The model suggests that children do not initially have access to real world/objective input at the early stages of language acquisition. Based upon the underdevelopment of the CS, as guided by an incomplete DMM, the type and amount of input accessible to the child is *delimited* in fundamental ways, leading to phenomenal treatments of e.g., random projections, omissions and commissions of inflection (as seen in agrammatic speech [13]), chunking, and potential 'derivational' morphologies [14]. The initial curve of U-shape learning may be attributed at this derivation. On speculation, external 'Merge' may only apply at this step—examples of which could include incorporation processes. The nature of a delimited lexical source is consistent with the views of 'unambiguous triggers' [11], and a 'Less-is-more' hypothesis [5, 6]—both of which espouse some form of a delimited lexical source as a way to account for the child's ability to extract paradigmatic material found in the input. (Note: we are defining the DMM as a 'cogno-linguistic' way station (a derivation interface between CS and spell-out) which first intervenes with input^0 , handles, computes and stores the processed *lexical source* (inputs^{2,1}) in such a way that it eventually triggers an expression of the target derivation).

(15) Examples of phonological *chunking* having to do with lost paradigmatic formations may be processed at this derivation—e.g., the Spanish determiner paradigm of *La : La-s* [*The* [+fem] [-pl], [+fem] [+pl]] is lost on **Lo: Lo-s* (*El: Los*), whereby Spanish speakers process *Los* as a list-generated phonological idiom and not a rule-generated stem [14]. However, recall that we make no further distinctions between the two forms (outside of this phonological distinction) other than to say that regulars involve true-rule segmentation and irregulars involve rote-learned, unproductive segmentation—both require movement. Given this, the determiner *Los* could be accessed (phonologically) early-on as an un-composed item at derivation #1 (without the appropriate morpho-syntax). (See §39, §40). Of course, derivation #2 does licit the full range of morpho-syntax appropriate to its full derivation. There could be some discussion as to how e.g., the infinitive affixes get processed in [-Bare Stem] Languages, recalling contrasts for the OI-stage between [+/ -Bare Stem] languages [17, 26].

(16) **Derivation 2.** DMM Processing With a fully developed DMM, both *Merge* and *Move* can apply with relevant implications to the theory. Movement (along with trace operations) is now possible fulfilling the formal definition of a language [13, 18]. Whereas merge-α operated strictly within the local head-comp domain, merge-β drives non-local movement. It may be at this phase of the derivation that delimited 'treelets' express parameter settings of a grammar [20].

(17) **The Data: INFL-related 'Agree'** Following the seminal works of Kayne [12] and Larson [8], and Abney [15], we assume that DPs maintain very similar verbal qualities in that they (i) both contain INFL-related material (projecting an IP) and (ii) both extend 'shell constructions'. E.g., determiners reflect a relation between their predicates—they can be either 'Transitive' as in [DP *We* students [predicate…]] or Intransitive as in [DP *We* [predicate…]]. Other factors such as DP-spreading in relation to DP-subjects v. DP-objects share in similar verb/finite-like qualities.

We similarly analyze both verbal and nominal {s} inflections as being reflexes of a singular [+Agr] feature; both inflections involve the same binding of traces regarding the moved element.

(18) **OCCURRENCE IN OBLIGATORY CONTEXTS** [3]

AGE	**3sgPres *s***	**Poss *'s***
2;3-3;1	0/69 (0%)	0/118 (0%)
3;2-3;6	72/168 (43%)	14/60 (23%)

(a) That *Mommy* car (2;6). No *Daddy* plane (2;8). *Batman* (2;11 in reply to Whose it is?). It *Daddy* bike, no *Baby* bike. Where *Daddy* car? (3;0).
(b) *Daddy's* turn (3;2). It's the *man's* paper (3;4). It's *big boy Nicolas's*.

(c) Baby *have* bottle (2;8). No Daddy *have* Babar (2;9). The car *go*. (2;11). The other one *work* (3;0). Here *come* Baby (3;1).
(d) Yes, this *works*. This car *works*. It *hurts*. The leg *hurts*. It *rains* (3;2).

If both possessive {*'s*}, third person singular {*s*} are reflexes of an Agr(eement) relation between a local inflectional head and its specifier (or via proper c-command), an obvious suggestion to make is that omission of the verbal {*s*} and nominal {*'s*} may both reflect AGR failure (failure to encode the AGR relation between an inflectional head and its specifier). We might say the clausal structures like *Mommy's driving* fall under the operation 'Move/Agree' and contain an IP (with AGR binding the trace of the moved DP, reflected in the agreement of features matching those of its subject-specifier), and the corresponding *s*-less clause *Mommy driving* containing a 'Merge/non-AGR' operation at the VP-level resulting in unspecified subject-agreement features:

(19) Thus, an INFL-relation to Case follows:

An overt (pro)nominal is

(a) Nominative if in +AGR relation with a Verb (= Merge-β: 'Move/Agree'),

(b) Genitive if in +AGR relation with a Noun (= Merge-β: 'Move/Agree'),

(c) Objective otherwise by Default, or inherent as base structure (= Merge-$_\alpha$: non Agr).

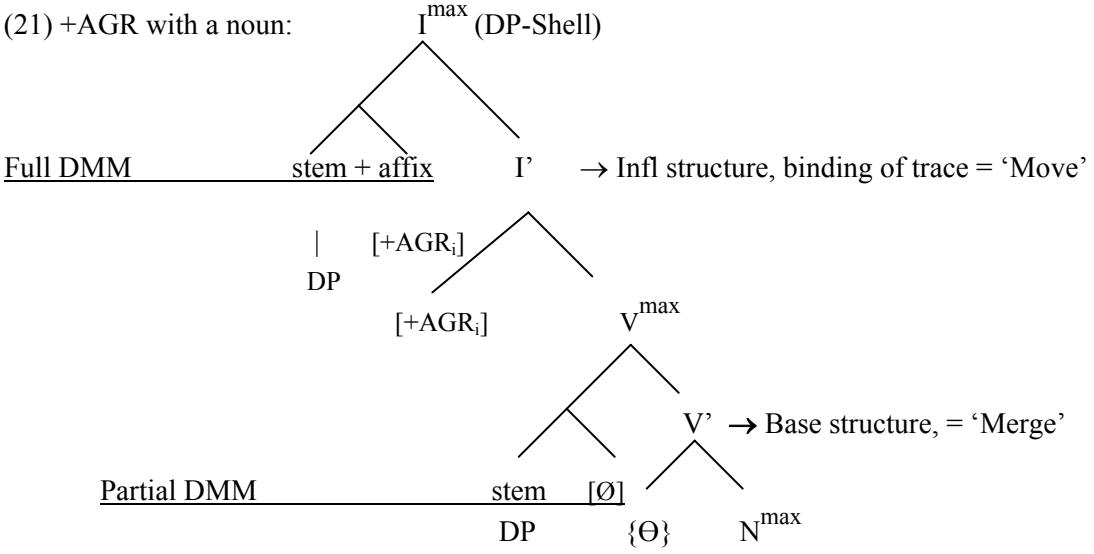
(20) Putting aside substantive issues regarding the CP, a 'strong' interpretation of the above 'INFL-relation' is to say that all categorical projections are in fact representations of IP via +AGREE, given the fact that INFL-related material is responsible for the governance of +AGR. In all other instances of –AGR, a VP (default) would suffice. All projections either collapses onto IP (via Merge-β Move/+Agree) or into a default VP (via Merge-α non-Move).

Naturally following (19) above, and compatible with the proposed model as presented above, consider how a 'DP-shell' can handle such Non-Inflectional structures found in the stage-1 data.

(*Note*: We make no distinction here in the models below regarding overt vs. cover movement since what we are arguing for is purely a DMM analogy of Inflection, nothing more).

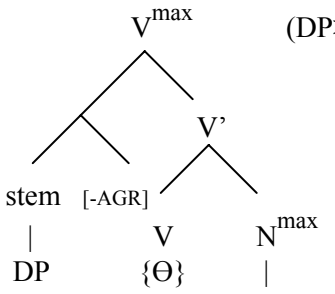
A DMM interpretation of a 'DP>$_{IP}$ Shell' analysis of target Case/Agreement

(21) +AGR with a noun:



A DMM interpretation of 'DP>VP Shell': -Nominal AGR (Possessives) at stage-1

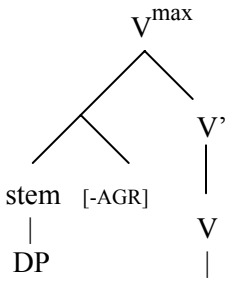
(22) –AGR with a noun:



[$_{VP}$ [DP Me [-AGR] dolly]] (DP>VP)

A DMM interpretation of a DP>VP Shell': -Verbal AGR (CASE) at stage-1

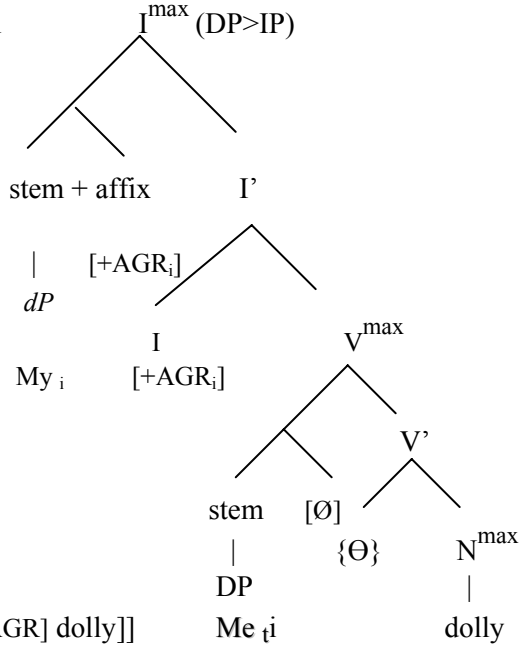
(23) –AGR with a verb:



[$_{VP}$ [DP Him [-AGR] V talk]] (DP>VP)

A DMM interpretation of DP-Shell: [Nominal +AGR] for Possessives at INFL stage-2

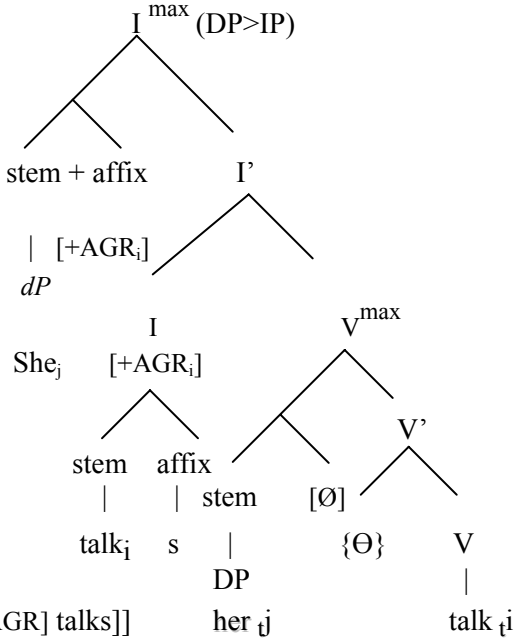
(24) +AGR with a noun



[$_{IP}$ [DP My [+AGR] dolly]]

A DMM interpretation of DP-Shell: [Verbal +AGR] at INFL stage-2

(25) +AGR with verb



[$_{IP}$ [DP She [+AGR] talks]]

(26) The light head (*dP*) of the DP-shell motivates movement of the DP>VP from out of its local relation in order to check AGREE required by its DP>IP relation (via either Spec-Head or by c-command). The DP>VP shell however does not motivate movement given there is (i) no light head to host a higher local relation owing to (ii) the absence of AGR. DP>VPs are *predicate sources* as their internal properties have to do only with local head-comp relations pertaining to thematic objects. Hence DP>VPs are default DPs.

(27) **Frequency of occurrence of first person singular possessors** [3]

AGE	DEFAULT 'ME'	GENITIVE CASE 'MY/MINE'
2;6-2;8	53/55 (96%)	2/55 (4%)
2;9	11/25 (44%)	14/25 (56%)
2;10	4/14 (29%	10/14 (71%)
2;11	5/24 (21%)	19/24 (79%)
3;0	4/54 (7%)	50/54 (93%)
3;1-3;6	6/231 (3%)	225/231 (97%)

Examples of first person/sing possessive structures are given below:

(28) (a) That *me* car. Have *me* shoe. *Me* and *Daddy* (= Mine and Daddy's).
Where *me* car? I want *me* car. I want *me* bottle. I want *me* woof (2;6-2;8)

(b) I want *me* duck. That *me* chair. Where *me* Q-car? No *me,* daddy (= It isn't mine, Daddy). *Me* pasta. *Mine* pasta. *My* pasta. In *my* key. It *my* (= It's mine). No book *my* (=The book isn't mine.)

(c) It is *my* TV. Where is *my* book? Where is *my* baseball? Don't touch *my* bike. I want *my* key. It's *my* money (3;0).

(29) **Frequency of second person possessors** [3]

AGE	YOU	YOUR
3;2-3;4	14/16 (88%)	2/16 (12%)
3;5	7/34 (21%)	27/34 (79%)
3;6	2/29 (7%)	27/29) (93%)

Typical examples of second person possessor structures are given below:

(30) (a) No *you* train. (=It's not your train). No it's *you* train, no (idem). No *you* baby, Mama baby. This is *you* pen (3;2)
(b) That's *your* car. It's *you* elephant. It's *you* turn. It's *you* kite. It's *you* plan. I got *you* plan. Close *your* eyes. It *you* house? No it's *you* house. Where's *you* house? Where's *you* bed? Where's *your* friend? (3;4)

(31) (a) [$_{IP}$ [DP your [+AGR] car]]
(b) [$_{VP}$ [DP you [-AGR] car]]

(32) (a) It's *him* house. It's *him* hat (x2). *Him* eye is broken. *Him* bike is broken. I want to go in *him* house. Help *him* legs. What's *him* name (x3)
(b) What's *his* name (x3)

In terms of the analysis presented here, nominals such as *his name/him name* would have the respective (simplified) structures (33a/b) below [12]:

(33) (a) [$_{IP}$ [DP his [+AGR] name]] (b) [$_{VP}$ [DP him [-AGR] name]]

We find a genitive *his* possessor by (19b) in (33a) where INFL is fully specified for possessor +AGR, and an objective *him* possessor by (19c) in (33b) where INFL does not project for +AGR.

Early onsets of the Determiner at the –AGR stage

(34) (a) If 'The' is underspecified for Case, but specified for Def, then DP is in Spec-VP, hence –AGR (DP>VP shell).
(b) If 'The' is fully specified for Case, and Def, etc., then DP is in Spec-IP, hence +AGR (DP>IP shell).

(35) Table 1

Use of Ds in Required Context (n.=100+ at VP-stage)	
File 2 (1;10)	33%
File 3 (1;11)	83%
File 4 (2;0)	78%
File 5 (2;0)	91%
File 6 (2;2)	86%
File 7 (2;3)	78%

Status of IP: person, number, case (excluding use of copula *Be*)
The features associated with (IP) are lacking in Files 1-7. However, one potential source of IP in my data is the use of ø 1 prs/sg verbs, though ambiguously finite. Therefore, the use of Case is crucial and should be applied in determining IP presence.

Regarding the feature specification of '*The*' found in the early files, it seems to be the case that

only the definiteness feature has been acquired—for instance, *Number* and *Case* do not appear in the early Files (2-7) as stated in the in-note above. (The first marking of plural {*s*} does not emerge until well into the later Files).

(36) Early reports of Determiners in an otherwise Non-AGR Non-Case stage suggests that such Determiners are caseless default DP>VP shells marked only for the +Interpretable feature [+Definiteness] [21].

(37) Overt Ds (+Def/-T, -Agr) (Files 2-7 (1;10-2;3)

a. *The dog* kick	*e. Iwant *the water*
b. All-done *the car* (VS)	f. *The dog* fall
c. *The door* broken	g. *The bottle* fall
d. *The car* fall	h. *The car* hurt

DP-Shells

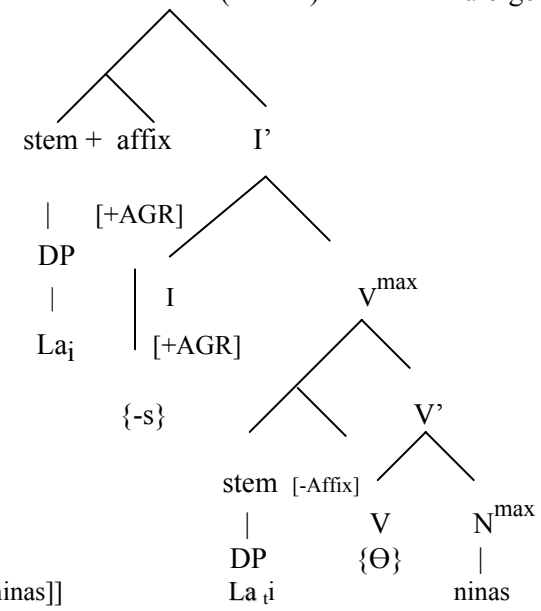
The early appearance of determiners such as '*The*' (above) can be interpreted as 'lower' determiners (DP>VP) of the type associated within the semantic/thematic VP object. In this way, apparent caseless [-Agr] determiners carry default (accusative) case along with a semantic +Interp feature of definiteness [+Def]

Perhaps the best way to consider DP-Shells is to consider the distinction in processing between stem+affix (rule-generated) determiners and (list-generated) incorporated stem determiners such as *Whose, These*, *The* and the Spanish example below of the distinction between *Las* v. *Los.*

(38) **Example of Spanish +/- Inflection: loss of a paradigm 'Las v. Los'**

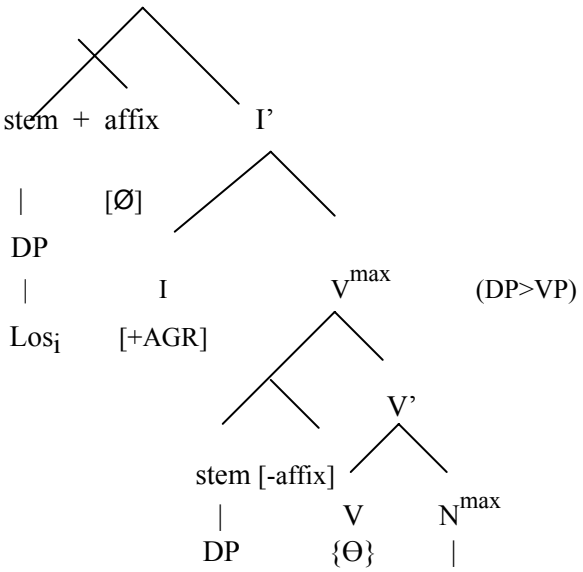
Consider the structure below showing both DP-shells

(39) 'Las' I^{max} (DP>IP) → Rule-generated Vocabulary Insert



$[_{IP}$ [DP Las $[_{I'}$ +AGR] ninas]]

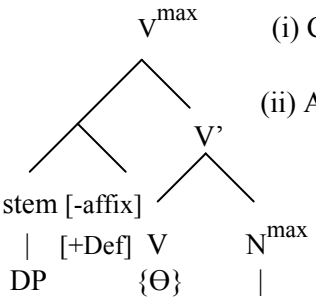
(40) 'Los' I^{max} (DP>IP) → List-generated Vocabulary Insert



$[_{IP}$ [DP Los [+AGR] ninos]] Los $_t$i ninos

For early child English, the potential chunking (a PF surface effect) of 'pied-piping' structures e.g., [DP *whose* [-AGR] *book*], having an otherwise target representation at LF as [DP [D who [D' {'s}] book], can be captured by the same shell analogy:

(41) $[_{VP}$ [DP Whose [-affix] book]]



(i) Child structure at stage-1

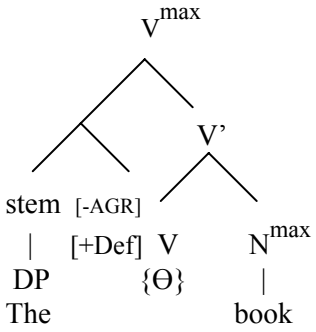
(ii) Adult structure prior to raising

(a) Whose book
(b) Los ninos

(42) By using the same analogy, early onsets of determiners (*The, a*) in an otherwise non–agreement/caseless stage could be similarly structured:

(43) $[_{VP}$ [DP The [-AGR] book]]

(c)



(44) **Word Order**

In summary, apparent free word order found among the Stage-1 Non-AGR files [4] can be equally accounted for using the proposed model from Merge-$_{\alpha}$ whereby single argument stem + stem sister formations cannot constitute a fixed word order (as based on Kayne's LCA [12]). Hence ordered head-comp or comp-head local relations may manifest as could imposter spec-head, head-spec relations—all attested in the data. Consider some token examples of mixed word order below. Examples of these two marked 'VS constructions' are given below in (45):

(45)
a. all gone Truck (file 2: 1;10)
b. all gone Bottle (file 6: 2;2)
c/d. all done The car/Me (files 7/16)
e. is A car (file 5: 2;0)
f. is A duck (file 4: 2;0)
g. (Cat), is A cat (file 3: 1;11)

(46)
a. kick baby (file 14: 2;7)
b. run baby (file 14: 2;7)
c. all break My bike (file 22: 3;0)
d. open me (file 19: 2;10)
e. eat baby (file 12: 2;6)
f. cook daddy (file15: 2;8)
g. help me (file 23: 3;2)
h. kick me (file 15: 2;8)
i. eat me (file 17: 2;8)
j. work bike (file 22: 3;0)
k. broke tree (file 23: 3;0)
l. want me (file 18: 2;9)
m. hurt car (file 16: 2;8)
n. go plane (file17: 2;8)

Table 2

Token counts		SV	VS	SVO	Other (xyz)
(files 8-16):	n.	87	78	290	1

(47)

VO
a. Kick the dog (file 4: 2;0)
b. Want my car (file 8: 2;4)
c. No cut train (file 16: 2;8)
d. Cook pasta (file18: 2;9)
(Dad cooks pasta)
e. want bottle (file 10: 2;4)
(Baby wants bottle)
f. Make a house (file 24: 3;3)
(He makes a house)
g. Work at home (file 23: 3;2)

OV
h. Dog kick (file 3: 1;11)
i. Baby kick (file 11: 2;5)
j. Ball a kick (file 16: 2;8)
k. A egg cook (file 20: 2;11)
l. A cookie eat (file 21: 3;0)
m. No baby hit (file 23: 3;2)
(I don't hit the baby)

Table 3

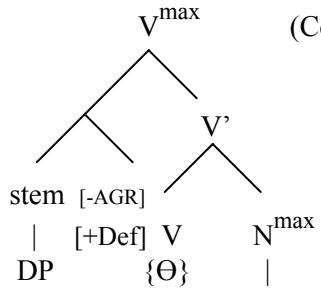
	Nom Case	Default Acc Case
SV: (n.418)	128	24
VS: (n.151)	0	32

Early Possessive word orders. A further observation has to do with the fact that word order errors seem also to correspond with the absence of the specification associated with the Head of DP: (possessive *'S*). It is observed in the data that the first attempts to project a Possessive construction (DP) (within a non-head double argument string) fail to realize the target order. Further implications to merge-α as discussed above apply here.

Consider the following examples in (48) below, where the Head Possessive *'S* is unspecified:

(48)

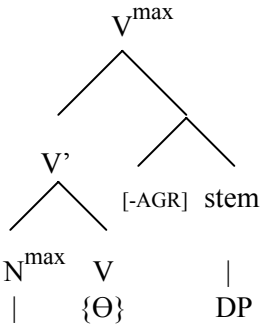
Spec-(H)-Comp	Comp-(H)-Spec
a. daddy ø truck (file: 3)	d. bottle ø baby (file: 12)
b. baby ø car (file: 11)	e. key ø mama (file: 10)
c. baby ø bottle (file: 12)	f. hair ø me (=my (file: 20))



(Comp final)

a'.	daddy	truck	(= daddy's truck)
b'.	baby	car	(= baby's car)
c'.	baby	bottle	(= baby's bottle)

(49)

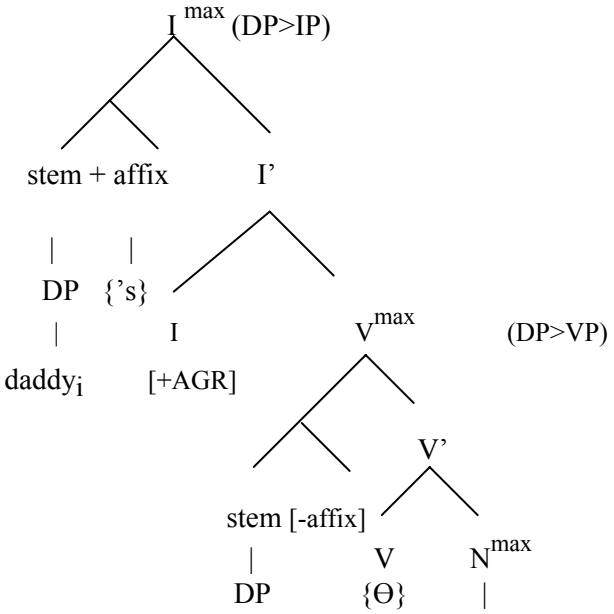


(Comp initial)

d.'	bottle	baby	(= baby's bottle)
e.'	key	mama	(= mama's key)
f.'	hair	me	(= my hair)

Target DP>IP Structure

(50)



[IP [DP daddy's [+AGR {'s}] truck]] daddy ti truck

Future Work: Using merge-α for compounding

The DMM equally does well in accounting for the observation that the rule-based affix {s} morpheme deletes in stem + stem compounding formation (e.g., rat+s => rats => rat-eater, {s} deletion (Gordon, 1985)). By incorporating our version of a first course default *merge-α over merge-β (and move)* (for adult processing), we may gain a fuller understanding of just how and why the {s} must drop in such [stem+stem] compounding, suggesting that the derived [noun+noun] formation is a par with merge-α whereby no INFL-related material can be positioned. This may be why Nouns + [finite] verbs rarely enter into such compound formations: **ball-plays/dish-washes/floor-cleaned/can-opened*. If such (exceptional) structures do occur (e.g., [N+{pl}+N] *courts-marshal*, or [V+{ed}+V] *opened-fire*), the high frequency of the structures may result in idiomatic representation with affixes being lexically incorporated.

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