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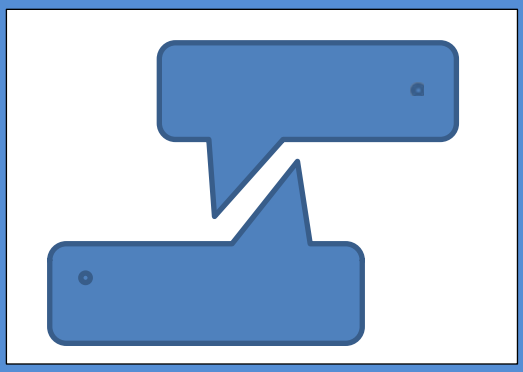

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Children's acquisition of the phoneme /r/ in Gaziantep province

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Abstract

The aim of this study is to provide normative data regarding the acquisition of the phoneme /r/ in normally developing children. A total of 60 children between 3-5 years participated in this research from Gaziantep province, Turkey. 15 different words including the phoneme /r/ as word-initial, word-medial and word-final were selected. A picture-naming procedure was applied in order to elicit speech from children. Findings suggest that until the age of 4, children do not produce 50% of customary production level. However, it is found that 5-year old children also do not reach 75% of acquisition, which is inconsistent with the current findings from normative studies in Turkey.

Keywords first language acquisition, child language, phoneme acquisition, phonetics, local varieties, Gaziantep

1. Introduction

Every language has a distinctive linguistic feature that distinguishes it from others. Language is manifested through spoken and written utterance. As a branch of linguistics, phonetics deals with specific properties in human speech sounds. The phonetic differences in languages are filtered and they are not perceived as sounds but as phonemes they represent (Widdowson, 1996). Children start to acquire phonological properties of their languages very early and they complete this process at approximately 4:0-5:0 years Children are sensitive to the linguistic features of the language even during infancy before they begin producing words and they are good at perceiving speech. They can notice relevant acoustic information from the speech (Ingram, 2001; Topbaş, 2005).

Comparative phonological studies show that there are similarities in the order of acquisition of the phonemes in various languages; however there can be some important differences as well. For example, both English and Turkish have /f/, /ʃ/ and /ʧ/ phonemes and their acquisition is different in those languages. While English children acquire /f/ first, Turkish children acquire /ʧ/ first (Ingram, 2001). Spanish children, on the other hand, acquire /r/ phoneme earlier than English children (Jimenez, 1987). Also, repertoire of sounds in languages may not allow distinction between some phonemes. For example, the two phonemes /l/ and /r/ are not distinctive in Japanese and both are mapped as /R/. However, in English and Italian those phonemes can change the meaning of a word like in *lace* and *race* (Guasti, 2002).

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Turkish language belongs to the Altaic language family and it exhibits pure characteristics of an object-verb language (Aksu-Koç & Slobin 1985). Turkish has flexible word order and the basic order form is Subject-Object-Verb (SOV). It is common to observe other word order forms in written and spoken language. It is an agglutinative language and affixes are added to the word root.

Topbaş (1997) defines six syllable structure patterns in Turkish: V, VC, VCC, CV, CVC and CVCC. The first three groups occurs word initially and others occur in any position. Word roots consist of maximum four syllable but morphemes can consist of long strings of syllable words. In the standard orthography there is one symbol per phoneme and Turkish has 29 symbols; eight for vowel phonemes and 21 for consonant phonemes (Topbaş, 1997).

The phoneme /r/ is a voiced alveolar tap produced with the tip of the tongue touching the alveolar ridge. It occurs in initial and medial positions. Devoiced [r] occurs in word-final positions. In colloquial speech, it is sometimes possible to see the phoneme /r/ deleted especially in imperfect suffix. For example, instead of "gel-iyor" (he is coming), it is not unusual to utter this sentence as "geliyo", the phoneme /r/ is deleted in progressive (–Iyor) and it is very common to say "bi elma" rather than "bir elma (one apple) by deleting the /r/ at the end. Apart from this common usage all over the country, the local people in Gaziantep province use an accent called "Antep ağzı" in which they occasionally shift imperfect suffix (–Iyor) with (–Iy), so instead of the common usage like "gidiyo" (he is going), they utter this sentence as "gidiy".

Ege (2010) conducted a normative study on the acquisition of consonants in Turkey. The sampling of this study consisted of 1359 children between ages of 2-12. Turkish picture-naming test of articulation (AAT) was used in order to analyse the responses from children in terms of age level, gender and position of the sound in the word at three levels (customary production, acquisition and mastery). In this study, results showed that there were not significant differences for gender but boys consistently made more mistakes than girls. Differences in the correct articulation within age group and differences in position of the consonants were statistically significant. In Turkish phonology, the liquids /l, r/ are late acquired phonemes. In terms of the phoneme /r/, we can see that children can do customary production (50%) only at 4:0 years and they can reach the acquisition level (75%) until 5:06 years. The mastery usage (90%) for this phoneme is not seen until 8:06 years.

On other hand, Yalçınkaya, Muluk and Budak (2005) administered a speech sound development test (SSDT) to 753 children between 1 and 7 years of age from seven different regions of Turkey. They used 75% 'pass criteria' as acquiring tested sound and 90% 'criteria' as completing development. In this study, it is found out that children complete the development of all sounds when they are between 5:0 and 6:0 years. Children in this study reach 75% acquisition of this phoneme at 4:0 years and they reach 90% completion of this phoneme at 5:0 years.

Topbaş (1997) carried out another normative study with twenty-two Turkish speaking children and examined the acquisition of phonology. The speech samples were taken from children aged between 1:3-3:0) and two children

(one boy and one girl) was observed longitudinally at monthly intervals from age 1:0 to 3:0. Topbaş (1997) obtained spontaneous speech in a 30-minute play session. Findings of this study indicated that the phoneme /r/ was found to be the latest sound and it started to appear at 3:0 years. The data suggests that Turkish children reflect universal tendencies as well as language-specific patterns. It is also observed that liquid deviation is the most frequent process. Especially when the liquid /r/ which occurred intervocally in –C,C-(intervocalic adjacent consonant) structure is deleted, a prevocalic vowel lengthening process is seen. The preceding vowel is lengthened and also gliding of this liquid to /j/ and /l/ can be observed as well.

1.1. Statement of the Problem

The development of speech sounds, especially in English, has been well examined and the phases of the phonetic acquisition has been documented (Topbaş, 2006 and 2011). However, regarding the phonological acquisition in Turkish, there are very limited normative studies and researchers have mostly aimed at building a standardisation for Turkish articulation (Ege, 2010; Yalçınkaya et al, 2005; Topbaş, 2006). Thus, it is necessary to get normative data describing age range for the acquisition of the phonemes.

1.2. Research Question

What are the customary production, acquisition and mastery ages for the acquisition of the phoneme /r/ in Turkish children?

2. Methodology

Data collection and processing

The sampling of this research consists of 60 Turkish speaking children (27 male/33 female) in Gaziantep province in Turkey. The speech sample was taken cross-sectional from children between 3:0-4:0 and 5:0 age intervals. The participants had normal hearing, vision, cognitive development and oral-motor skills. The data was collected from three different kindergartens in different parts of the city in order to get a clearer picture considering various socio-economical backgrounds. Table 1 shows the number of boys and girls for age groups:

Table 1: Age group of the sampling

Age Group	Male (n)	Female (n)	Total
3:0-3:11	9	11	20
4:0-4:11	9	11	20
5:0-5:11	10	10	20
Total	28	32	60

Children's data were collected by picture-naming to elicit word production. The researcher prepared 15 pictures and a checklist for each picture. The children were asked to name the pictures in order to elicit natural

production. Topbaş (1997) mentioned three positions for the word production as word-initial, word-medial and word final. On the other hand, Grunwell (1987) expanded these word positions and claimed that words may consist of more than one syllable. Thus, the word selection can also be extended in four categories as:

1- Syllable-initial word-initial: re,sim (picture)
2- Syllable-final word final: pey,nir (cheese)
3- Syllable-initial within word: sa,rı (yellow)
4- Syllable-final within word: ar,mut (pear)

Considering the children's age, the words were categorised in three positions as word-initial, word-medial and word-final. Table 2 illustrates the categories and the words used in this research:

Table 2: Word Categories

Word-Initial	Word-Medial	Word-Final
Resim	Arı	Peynir
Ressam	Armut	Yağmur
Roket	Araba	Doktor
Radyo	Kırmızı	Şoför
Robot	Sarı	Berber/Kuaför

All of the data were recorded by using a voice recorder under good conditions. The researcher used the checklist to obtain the data by listening to the recordings soon after the sessions. The researcher marked a tick for the correct pronunciation and a cross for the wrong one. For the wrong pronunciations, the type of the mistake was shown as whether it is a glide to /l, j/ (alaba-ayaba) or a pre-vowel lengthening (aamut).
Children's utterances were analysed according to the total number of correct utterances. If the utterances reach 50% and over, it is accepted as customary production level. In order to accept the utterances as "acquired", they have to reach 75% criteria. The productions over 90% are accepted as "mastery" (Topbaş, 1996; Yalçınkaya et al, 2005; Ege, 2010).

3. Findings

The children produced 900 utterances and the findings of these productions were categorised according to ages. Table 3 shows the number of correct and incorrect utterances with rates.

Table 3: The number of correct and wrong utterances with rates

Age	Correct	Incorrect	%
3:0-3:11	137	163	41.1
4:0-4:11	207	93	62.1
5:0-5:11	230	70	69

From 3:0 to 3:11 years, children's productions do not reach 50% customary production level. From 4:0 to 4:11 years, correct productions increase to 62.1% and between 5:0 and 5:11, these productions increase to 69%.

Children mispronounced 326 utterances and these errors are categorised in Table 4:

Table 4: The categorisation of the mispronunciations

Gliding to /j/	Gliding to /l/	Prevocalic vowel lengthening
294	17	15

All of the prevocalic vowel lengthenings were observed with the word "armut". Children pronounced this word as /aamut/ but deleting the phoneme /r/ and lengthening previous vowel. The gliding to /l/ occurred with "araba, sarı, resim, roket, arı, robot and radio. This is only seen with word-initial and word-medial positions.

4. Conclusions and Discussion

Studies from cross-linguistic literature provide that acquisition of the phonemes is gradual. There can be similarities across languages and children, but there can be differences as well. In this study, we can see that between 3:0 and 3:11 years, correct pronunciation of the phoneme /r/ only reach to 41.1%.

Findings suggest that children's productions do not reach 50% customary production level until 4:0 years. This finding coincides with Ege's (2010) findings on her normative study. Between 4:0 and 4:11 years, utterances surpass 50% customary production level. This production level is also consistent with the data from other researchers (Topbaş, 1996; Yalçınkaya et al, 2005; Ege, 2010). However, from 5:0 to 5:11 years, productions increase to 69%, which shows a slight increase compared with the data from 4 years. Thus, even at 5:0-5:11 age interval, these productions do not meet 75% acquisition criteria. These findings are inconsistent with the data from Ege (2010) and Yalçınkaya, et al. (2005).

The cross-linguistics data on the acquisition of the phoneme /r/ also does not correlate with the findings of this study. The cross-sectional studies among American, British and Australian children reveal that the acquisition of the liquid consonants is completed at 6:0 years. The research by Chirlian and Sharpley (1982) points out that Australian children complete the acquisition of this phoneme as early as 5:0 years. The acquisition of the phoneme /r/among American children is completed between 5:6 and 6:0 years (Smit, Hand, Frelinger, Bernthal and Bird, 1990). The British children, on the other hand, do not complete the acquisition of the liquids until 6:0 years (Dodd, Holm, Hua and Crosbie, 2003). Findings from Spanish and Arabic speaking children also point out that the completion of the acquisition of this phoneme is completed at 6:0 years (Jimenez, B.C., 1987; Amayreh, M. & Dyson A., 1998).

The results indicate that there seems to be a delay in the acquisition the phoneme the phoneme /r/ and there is a digression even in Turkish context together with the findings from various languages. The reason for this delay in acquisition might arise from children's use of local accent (Antep ağzı) with their parents. When children do not use the standard Turkish and prefer the local accent until schooling, the acquisition of this phoneme is postponed to later stages. For that reason, it is advised for the prospective researchers to carry on this study at 6:0-6:11 and 7:0-7:11 age intervals in order to see when these productions reach 75% acquisition and 90% mastery levels.

One point that worth considering is that children at kindergarten are generally from working parents and parents' hometowns were not specified in this study. It is probable that these parents might be from other cities beside Gaziantep. Some parents might be using local accent at their homes, while others may be using standard Turkish. For that reason, conducting this research in rural areas and countryside where parents only use local accent and do not tent to send their children to kindergartens might give a valuable insight into the acquisition in a broader window. In this case, it can be easier to spot whether this contrast with different languages is sharpening or not.

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Small Children's Sentences are 'Dead on Arrival': Remarks on a Minimalist Approach to Early Child Syntax

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Abstract

As the title suggests, *Small children's sentences are 'Dead on Arrival'*—if by that we mean that the young child's syntactic parser is unable to advance (MOVE) a morpho-syntactic utterance, both at PF (phonology form) and at LF (logical form) up the syntactic tree (whereby **MOVE**ment would thus save the derivation from being sent off immediately to early semantic transfer). The deficient for a lack of movement is not just a surface-level PF deficit, but is also pervasive at interpretation. Hence, as a metaphor for the lack of movement (both at PF and LF), children's early utterances are indeed semantically frozen deep within the prosaic trappings of the bottom portion of the tree (namely, within the VP phrase) and are thus sent immediately to spell-out. In this paper I propose an initial 'merge-only' stage of child syntax which can account for a rather wide spectrum of implications leading to the impoverished state of early child syntax. Using Chomsky's current Minimalist Program (MP) framework, I adopt a 'Merge over Move' hypothesis as a developmental sequence thus accounting for the cited *mixed word order, lack of inflection*, and *misreading of syntactic compounds* found in the data.

Keywords merge over move, minimalist program, child language syntax, biolinguistics

1. Introduction

In this paper, we set out a dual model which attempts to peg *Merge* operations to one singular mode of brain processing (viz., that which assigns form to meaning) while pegging *Move* to distinct processes in the brain which underwrite abstract computations (e.g., rules and variables). In this paper, we will come to consider how Merge follows an adjacency principle of closeness, for example, in the manner in which a verb assigns its **theta-roles** to its adjacent arguments (within the closeness of the VP), and that Move is more related to distance and structure-dependency, for example, as seen in **c-command**. Hence, we view Merge as a 'sisterhood' relation within, say, the [VP…] configuration, and view Move as [TP [VP…]] which forms a distance-related structure-dependency configuration. By extension, Merge is Lexical Projection (LP) in nature and Move is Functional Projection (FP).

The classic Wernicke vs. Broca area split may not be too far off the mark here with respect to a respective mapping of LP/FP to Merge/Move operation. The split is captured in the linguistics literature as the 'semantic' vs. 'syntactic' cut (respectively) whereby merge identifies with phonosemantics and move identifies with syntax. We believe a dual track of

[1] Bio: His main research involves issues surrounding early child language development. He is interested in pursuing certain 'Minimalist Program' assumptions (Chomsky 1995) and to ask how such assumptions might explain observed early stages of morphosyntactic development in children. Joseph Galasso is on the Linguistics Faculty at California State University, Northridge. Contact: joseph.galasso@csun.edu, http://www.joseph.galasso@csun.edu

merge and move is required in order to appreciate the full scope of language development. In the literature this dual track has been referred to as the Dual Mechanism Model (DMM). (See Clahsen 1999 and Pinker 1999 for review). While the DMM is typically assigned to adult/target morphological processing—rule-based inflectional morphology and regular formation vs. rote-learned derivational morphology and irregular formation—our view is to extend the DMM to the incremental phases of child syntactic development. We do so by mapping the aforementioned phases of DMM to Merge vs Move' operations in early syntax. In other words, we suggest that adjacency-driven operations whereby memorization is involved maps onto what we know about 'closeness of MERGE' and where distance of structure maps onto MOVE (a Merge over Move (MoM) distinction). (Well can consider such an MoM distinction syntactically by asking what is behind the notion of the Verb Phrase Subject Internal Hypothesis (VPISH) condition whereby 'closeness of structure' is required [TP [VP subj…]] versus what we know about c-command where distance of structure comes into view [TP Subj [VP ~~subj~~…]]

What we are presenting here suggests that there might be a linguistic example of the old adage—'ontogeny recapitulates phylogeny' (Haeckel), at least in terms of how we can connect the early building-blocks of the architecture to what we now know about the way binary branching might evolve in the scheme of child syntactic development. In making this connection, we consider the idea that merge sequences as an early step along the path of constructing a binary architecture required of language design. We then turn to the data to see how the nature of the architecture might impact the progression of child syntax.

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1.1. Critical periods

Sensitive 'critical periods' in development have long intrigued biologist. One question has been at what point do infants shows signs of hemispheric specialization for formal properties of syntax. In specific terms, when does myelination occur connecting neuro-pathways from (i) the temporal-lobe region/Wernicke's area of the brain (which is responsible to a large degree for [+frequency-sensitive] lexical retrieval) to (ii) front-left hemisphere/Broca's area (responsible for [-frequency-sensitive] movement-based/rule operations)? Any putative notion of maturation of myelination in this way directly leads us to a 'maturational theory' of language development, at least in regards to where these two regions of the language-to-brain corollary are concerned (e.g., Radford 1990, Wakefield & Wilcox 1994). While there is robust evidence that children initially move from using both sides of their brain to using the left hemisphere, known as lateralization (e.g., Mills et al. 1997), the question has been—What is the nature of such incremental steps leading to full left-brain lateralization of language, and how might such incremental phases map onto our current understanding of syntactic theory? Coupled with this, what current developmental linguists

are looking for is a viable 'unifying processing model' which can account—incrementally in the child over time—for a triad processing of: (a) imitative sound-to-meaning conservative word mapping via non-productive rote-learning [+frequency-sensitive] (e.g., book > /bʊ́k/, tree > /tri/), (b) analogies which then give way to semi-productivity within word schemes [+frequency-sensitive] (e.g., present to past tense zero-inflection {Ø} internal word schemes of verbs which end in /__t/: hurt>hurt-Ø therefore set>set-Ø, or the [#ing>#ang>#ung] analogy which produces correct sing>sang>sung, ring>rang>rung> but erroneous *bring>brang>brung), and finally (c) a rule-based computational system which defies sensitivity to frequency all together and is rather purely productive—for example, the productivity [-Freq(uency)-sensitive] of a default phonological rule of such verbs ending with /__t/ to /Id/ (wanted, visited > to over-regularized *hurted). This latter (over-regularized) processing speaks to the true abstract nature of rules and suggests movement operations such that a category <[V] + /Id/ = past tense>, or morphological so by adding via default an {ed} to any category V to project past tense [[V] ed]. (By extension, Berko's classic 'Wug's Test' (Berko 1958) is applicable: [[wug] -Pl] becomes [[wug]s]). Any putative underwriting of such incremental processing would look like the following, using variable formation:

(i) x + x => x (lexicalization) [V *break*] + [N *fast*] = [*breakfast*]
[N wine] + [N bottle] = [AdjP wine bottle]

(ii) [w [xy]] => [z [xy]] (analogy) [_[ug]] > [_[ugs]]
bug > *bugs*,
[*wug*] > [*wugs*]

(iii) {γ{α, β}} or x + y = z (computational) *two* [[*book*]*s*], *two* [[*wug*]*s*]
John [[*drive*]*s*], *has* [[*driv*]*en*]

1.2. The Minimalist Program

This paper attempts to utilize Chomsky's current **Minimalist Program**—which places non-trivial distinctions of **Merge vs. Move**—in ways that might deliver a maturational-based unifying processing model that can account for attested triad-incremental processing found in early child syntax—viz., where the child is seen from moving from +Freq sensitive processing to –Freq processing. By suggesting that it is the prosaic **merge operation** which solely underwrites the initial syntactic stages of child language, we can account for the rather conservative nature of 'singular interpretations' of e.g., morphological compounds *boathouse* and *houseboat*, or syntactic formations of e.g., *wine bottle* and *bottle of wine* as having a unified interpretation. (See Roeper 2007, 2011, for general discussion regarding maturation of recursion). As a final note, the incremental nature of processing suggests *'Less is More'* (Newport, 1990) and *'Start Small'* hypotheses (Elman, 1993) to child language development.

As the title suggest, *Small children's sentences are 'Dead on Arrival'*—if by that we mean that the child's syntactic parser is unable to advance (MOVE) a morpho-syntactic utterance up the syntactic tree (whereby **MOVE**ment would thus *save* the derivation from being sent off to early semantic

transfer—a kind of limbo for syntactic strings). Hence, as a metaphor for the lack of movement, children's early utterances are indeed semantically frozen deep within the prosaic trappings of the bottom portion of the tree (namely, within the VP phrase) and are thus 'dead on arrival' since there is no other escape hatch into which an utterance may advance—what we mean by 'advancing' is that the syntactic string, along with its features, is kept alive for more formal interpretations. Namely, higher functional features/projections headed by higher hosts remain viable landing sites for syntactic elements as the string moves up the syntactic tree.

Most importantly, using **Minimalist Program** (MP) assumptions, Dead or Frozen syntactic items which are 'Dead on Arrival' also implies that the utterance has indeed arrived from some primitive mode of **Merge** processing, though nonetheless, is unable to escape the bond of such primitive processing. The metaphor for 'Dead on Arrival' may also have further implications to how the child's mind might handle perceived language (comprehension—e.g., our *wine bottle vs. bottle of wine* distinction below). It goes without saying, in **Minimalists** terms (Chomsky 1995), that any fragments of language which remain frozen within VP and undergoing immediate spell-out to PF/LF would implicate the inner-trappings of **inflectional morphology** (INFL) as well as **word order**—given the onset and correct settings of INFL and word order are the result of higher functional categories beyond the VP. These two early-child phenomena are examined in this paper.

More than any other syntactic operation, it seems that the operation 'Move-α'—an optional operation which basically allows for a syntactic item to be moved (from out of its base-generated position) anytime, anywhere—has become the singular phenomenon that separates and defines human language from that of all other modes of (animal) communication. Given this 'exceptional status' among the human computational system, it should be of no surprise to us that move-α comes with its own portmanteau of features, namely the fact that move-α is principle-based ('move' comes for *free* as part of the language design), is govern by UG parameters (in determining whether or not it manifests and to what extent across language structures), and perhaps the most intricate of features is that 'move' works in direct tandem with the brain-to-language corollary. If the brain shows a protracted maturational development with regards to language, then we should equally find that 'move' suffers similar delays.

The burning question in the minds of most developmental linguists then is: What is the nature of movement in young children? Is there a lack of movement in early syntactic stages and, if so, what exactly are the consequences? With a touch of backwards engineering, we can gain a rough peek at what the more primitive structures of early child syntax look like prior to movement. We assume that all instances of morphology, being quintessential abstract in nature, entail (i) some level of abstraction, and (ii) that abstraction, by our linguistics definition, entails some amount of a *movement analogy*. Hence word order, compounding, derivational and inflectional morphologies all entail some level of movement. However the family of movement is spread over a cline. On one extreme pole of the 'Move spectrum', we follow Roeper (2009) and show that 'distant move' blocks

transfer to interpretation and thus allows an item/phase to survive and move-up the syntactic tree in order to acquire more abstract feature specificity. On the low range of the spectrum, we show how 'local move' immediately gets sent to interpretation and thus secures a more thematic/semantic reading. (We view the former 'distant move' (MOVE) as an aspect of INFLectional morphology and the latter 'local move' (MERGE) an aspect of compounding and Derivational morphology).

These data (see §9 Appendix) based on a longitudinal case study of an English speaking child convincingly show that a stage exists prior to any Optional Infinitive stage during which distant move is altogether lacking. We find all instances of INFL missing, and that all structures immediately transfer to interpretation upon completion of merge. Regarding mapping of the mental lexicon, we view such *bricolage* merge structures as maintaining their frame compliance/semantic over any potential syntactic compliance (e.g., *wine bottle vs. bottle of wine* (e.g., Lidz et al)). If *wine bottle* lacks movement to save the derivation from transfer, then, as a consequence, an immediate semantic reading should be forced upon the child at the very earliest point in the derivation—e.g., *wine bottle* and *bottle of wine* represent the same concepts to early children (this same result is found within compound interpretation where there is a lack of syntactic Headnesses for the phrase—e.g., where young children are unable to handle distinctions in the readings of *house-boat* vs *boat-house* (children guess 50-50 when shown a picture of a *house-boat* at whether it is a 'house-boat' or a 'boat-house' (See Roeper 2007 for discussion)). In fact this is what we find, an early semantic reading—viz., *wine bottle* gets spelled-out semantically well before a syntactic reading can be offered.

Hence, in such cases, young children will lack not only a syntactic realization of genitive [+Gen] possessive (as the data show), but also suffer from word order anomalies (too shown in the data) suggesting movement is yet to be applied at the exclusive merge stage of syntactic development. For example, Eve Clark (1984) was perhaps the first to spot deverbal VO-compounds such as *driver-truck* showing a word order which indicated non-movement of a base-generated object (adhering to English dominant SVO word order). Once object-movement is allowed to project from out of a base-generated structure, we derive the synthetic compound as [*truck* [*driver-truck*]] yielding a displaced OV order. (See the Appendix §9.3 for an account of Merge-based root compounds (RCs) vs. Move-based synthetic compounds (SCs). Likewise, regarding a maturational-based theory of movement, Carol Chomsky (1969) observed the inability for young children to apply movement operations at an underlying structure to passives—e.g., so that when asked: Who is doing the kissing? to the statement '*Mary was kissed by John*', they systematically responded to the question as '*It is "Mary" who did the kissing*' showing that the first nominal realized on the surface level carried a default interpretation of active subject—viz., it seems the 'passive object' could not be moved into a fronted position for the reading of active subject.

In this paper, we follow in the wake of recent theoretical research undertaken in child syntax—e.g., Tom Roeper, among others working within

the Minimalist Progam (MP) framework of Merge over Move (MoM)[2]—and assume Roeper's notion of *Phase* to be redefined as any constituency which can be affected by MOVE (or the lack thereof)—where MOVE is understood as delaying the derivation from transfer (for 1st order semantic interpretation) in order to secure additional '2nd order' syntactic/semantic/discourse interpretive readings: it is commonly accepted that such 2nd order structure projects from higher 'functional categorical' levels above the prosaic NP/VP of the syntactic tree (e.g., 2nd order projects would include: DP, vP, TP, CP). We view MOM here in a rather exclusive way by suggesting that merge operations have to do with the *bricolage* (bottom-up building) nature of linking two items (x, y) as pulled from the lexicon. In this sense, Merge doesn't insure that the properties of {x} involve displacement from the item itself. In other words, simple merge yields {two sister} relations via <logical and> {x, y}, and not {y, {x, y}}, with the former being a flat property of MERGE and the latter being a recursive property of MOVE.

Hence, we will view MOVE as the leading motivation not only for higher 2nd order syntactic structure (the emergent tree template), but also, as a consequence of higher order projections, as an exaptive processes whereby syntactic-discourse interpretations can be read. But in order to advance any MoM account which delays transfer to spell-out, we must first define what exactly constitutes MOVE. In so doing, there is an attempt to connect notions of features of Semantics (Sem) (=derivational morphology) to Syntax (= inflectional morphology) via a +/-Agreement parameter. For instance, a synchronic continuum of affix agreement is proposed to help with the defining of +/- MOVE—e.g., derivational affixes are defined as [+Sem: -Agr/-Move] and Inflectional affixes are defined as [-SEM: +Agr/+Move]. Such redefining characterizes the spectrum of affix morphology as a 'bundle of co-indexing/binding features' which hold perhaps over long structural distances. The [AGR/Move] parameter will also overlap with what we shall call productivity.

We'll argue in this paper that very young children's structures (ages 18-36 months) get sent to transfer as early as possible due to the fact that MOVE has yet to emerge as a parameter within their syntactic processor. In this sense, +Agr/+Move is seen as a setting which delays transfer of a lexical item to spell-out and secures the item's movement to higher syntactic functional heads up the syntactic tree. (A –AGR/-Move under- specification forces transfer to spell-out). A maturational-based syntactic *structure-building hypothesis* is advanced in that young English speaking children are forced into projecting and interpreting syntactically impoverished utterances prior

[2] We utilize MoM in the sense that MOVE (but not Merge) is seen as delaying the syntactic string to transfer, hence keeping the string 'alive' to be acted upon. Nothing otherwise hinges on an MoM-approach other that the notion that there is an early stage of syntactic development during which Non-INFL and mixed word orders appear in child speech. It must be said that in the recent syntactic literature (Chomsky post-1995), there has been a move away from any such Merge preference over Move. Both are seen as coming freely out of the architectural design of the Language Faculty (LF). Merge is no longer seen as more economical or less costly than move. But there is still a flavor of truth to the nation that merge may encode much more local, adjacency formations while Move is more distant—viz., a 'local over distant' dichotomy to replace 'merge over move'.

to the formation of MOVE, and in conjunction with the absence of functional categories. By analyzing each affix element and how it falls along the cline of affix continuum, we have a better chance at determining how that affix might be handled by a traditional syntactic tree. The overriding criterion determining where the affix falls in the tree will be (i) whether or not the affix abides by true co-indexing and binding (perhaps over a distance), and (ii) the level at which the affix remains productive.

2. Methodology

2.1 An Overview of the Data Analyses

The present paper, based on a longitudinal case study of an English speaking child's spontaneous language (recordings starting at 14 months till 40 months, morpho- syntactically coded), covers the **acquisition of movement** and extends its analysis to properties of **inflectional morphology** as well as to **word order**. We examine the role the absence of 'Move' might play in accounting for the early appearance of *morpho-syntactic* and *word order* violations. Regarding word order, initial (non-head) merge-operations which yield mixed non-hierarchical flat structures as found in the data like *{coffee, cup}* or *{cup, coffee}* [[N cup] + [N coffee]] can then later proceed to projecting an assigned Head of the merge configuration which can then target dual move-operations instigated by Inflectional Phrase (IP) structures accordingly:

(1) (a) *Merge* [[N cup] + [N coffee]] → Two lexical items merge: *cup, coffee*
(b) *Move-1* [[$_{DP}$/IP cup$_i$ [I' of]… [~~cup~~$_i$] [coffee]]→ Genitive
(c) *Move-2* [[$_{AdjP}$/IP *coffee$_i$ cup*] of ~~coffee~~$_i$]→ Adjectival (derived via Genitive)

(It is ultimately the subsequent assigning/targeting of a Head within an initial non-head flat structure which provides the environment for movement to take place (e.g., Head-to-Head movement). For genitive (1b) 'cup of coffee', the head is assigned to the target/noun 'cup' which then must move (since 'coffee' naturally serves as a complement of the head 'cup'—e.g., coffee is contained in a cup, as in 'cup of_').

Once the environment for movement is created—viz., a head is targeted along with some features specificity which motivates movement up the syntactic tree—higher functional positions must project in order to host the moved element. In the cases above, both MOVE structures such as genitive *cup of coffee (*1b) and genitive derived adjectival *coffee cup* (1c) require a higher clitic position as a result of a movement operation from the base *merge* [cup, coffee]. Adult (hierarchical) English uniquely allows for both a move-2 compliant structure e.g., *wine bottle* (= predicative adjective) and a move-1 compliant structure *bottle of wine* (=genitive), but not *bottle wine.* Any 'non-compliance of movement' would then account not only for our attested child word order deviance of the type *cup coffee* found in our data, but also allow us to account for the wide array of mixed word order found amongst early SV, VO 'single argument strings' (where only *merge* is said to

apply), with late acquired 'double argument strings' thus targeting a position created by *move* and triggering correct SVO word order.
Other ubiquitous examples come from 'affix-hopping' where verbal/nominal inflection is seen as a result of movement e.g., *Tom's book* [IP *Tom* [I *'s*] *book*], *drinks milk* [IP drink] [I {s}] milk]. The proposed theoretical model presented in this paper shows how the delay of both word order and inflectional morphology alike follow from a protracted development in which 'Merge' operations emerge in the child's grammar slightly ahead of 'Move'—a 'Merge-first' over 'Move-later' account of syntactic development. The theoretical analysis used throughout dispenses with the class lexical vs. functional category distinction and instead uses as a different heuristic measure of linguistic abstraction based upon the 'distance travelled' of a morpheme/word as incurred by movement. We take it that *Local Move* (what we label as 'Merge-1') undergoes the checking-off of [+Interp(retable)/semantic] features, while *Distant Move* ('Merge-2) checks more abstract/syntactic [-Interp] features.

3. A jumping off point—Assumptions based on Chomsky's Minimalist Program[3]

We assume the **Minimalist Program** (MP) as our main point of departure (Chomsky 1995-current). The fact that Chomsky himself states the Minimalist Program as a 'program' allows much room for runs on alternative perspectives and counter-theoretical claims. In an all-inclusive sense of the term 'program', our focus here is to narrow our scope and assert an MP treatment on what has become considered as classic and uncontroversial data regarding stages of early child English syntax. Our essential claim herein will be that MP delivers us a strong internal/computational theory of language, with strong claims leading to the so-called 'three factors' of language growth and development:

(2) Three factors:
- i. the *external data* (the environmental input),
- ii. the *internal* genetically endowed *Language Faculty* (otherwise known as Universal Grammar (UG) which 'catches' and 'processes' the input), and
- iii. non-language specific demands which might arise from out of the *architectural design* of any organized and principled computational system.

All three factors—the first two of which are exclusively language-based—squarely place language within the *biological null hypothesis*—viz., that language is both *computational* and *maturational* (both falling naturally from out of design and maturation of design). These two leading tenants lead to our findings on child language development. The third factor, an essentially 'non-language-specific' factor, might speak to cognitive/general problem solving machinery which naturally falls out of the brain/mind architectural design. For instance, say, working memory, or the fact that phonology must be made linear to be legible—e.g., the stacking of phonemes /b/, /d/, /g/, yielding a /bdg/ blur—might not be a UG requirement, but rather just might be a non-UG, non-language specific stipulation necessity based upon human

[3] Noam Chomsky 'The Minimalist Program' (Chapter 4).

auditory constraints. More recently, the notion of *phase* comes to mind as a non-language specific stipulation having to do with lessening the burden of memory involved with the task of performing derivational steps on a syntactic string—with phases, strings can be worked on (each derivational step of the way) in short incremental chunks. Perhaps similar to how amino acids might work on a code for proteins). In any case, we must deal with this third factor too since it is an exclusive human brain/mind design which ultimately underwrites language. Hence, some language essentials may come about due to demands on design alone, rather than, say, being stipulated as part-and-parcel of UG (meeting a language specific demand). A unifying approach will be to spell-out how all three factors converge within a morpho-syntactic template. A special eye will be kept on linguistic theory particularly dealing with **Merge over Move (MOM)** and to see if a maturational hypothesis of MOM is warranted.

3.1 First instance Merge (Proto-merge)

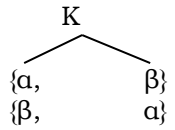
One of the most basic universal underpinnings of syntax is that of binary Merge or Proto- Merge: where element α has to somehow merge with β, yielding a Set (S) S= {α, β,}.

(3) *Merge S*= {α, β,}.

In the first instance proto-merge, this is all well and good, but, due to symmetry, no directionality comes of it—i.e., there is no intrinsic hierarchy since both elements would equally share in *sisterhood* status ({α, β} are sisters). But such equal status sharing won't do since word order is a very basic principle of language design, and word order requires some dominance control (K) over the labeling of the phrase—viz., one of the two sisters must be promoted to having a step-mother status.

Proto-merge

(4) Step-*1: 'merge/Member'*



(variable word-order is allowed)

(5) *merge/Member yields Sets:*

Sets:

⇨ {α, β}{α, β}{α, β}{α β}…
{β, α}{β, α}{β, α}{β, α}…

Here, in step-1 of merge/Member (of what has been referred to as **proto-merge** (e.g., Di Sciullo, 2014)) K = Set {α, β}{β, α}… whereby—and out of design of computational process—the two selected items of S(et) hold *sisterhood* and *immediate contain* status—with 'sisterhood' defining their symmetry, and 'contain' defining the fact that the two objects make-up S. Let's go on to call this *merge/Set* since what we have is the merging of Members in creating a Set. However, merge/Member → merge/Set still does not yield a dominance-relation naturally out of design (there still is no hierarchy). No matter how many multiple 'merge/members provide for Sets, these are still 'flat' sisterhood structures. To a degree such flat structures can provide for the stacking-up of one item on top of another, though still, in

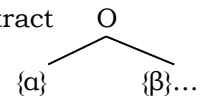
theory, there is no hierarchy (the stacking would have no order, unlike how hierarchical adjectival structures do have order, e.g., *the 'red brick' house*, **the 'brick red' house*). Such adjectival ordering would therefore require a hierarchical scheme not otherwise made available via a simple merge/Member operation. (We'll come back to this point). Multi-flat structures amount to *logical* {and}: e.g., as in the string 'I bought…*a,b,c,d,e,f,g*….where any order would suffice (I bought…*a,g,b,c,f,e,d*…). So, *I love 'mom and dad'* is the same as *I love 'dad and mom'* (under this flat-structure analysis) but not the same as the wild unordered **Dad I mom love and* which speaks to the notion that subject-verb *I love* and verb-objects *love mom, dad* must have a hierarchical status in that each constituency must configure as a Headed Phrase.

3.2 Phrase Labelling

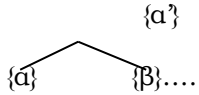
The most basic principle of language is the notion that a syntactic object (α) must be somehow combined with a second syntactic object (β), forming a new third syntactic Object (O), as in $O_{\alpha,\ \beta}$. This new syntactic object initially has the capacity to hold as an equal reflexive property the two objects which are combined, so that ({α} = {β}). But immediately thereafter, the new syntactic object seeks dominance, leading to anti-symmetry, ({α} > {β}). The immediate result here is that the reflexive quality itself must be asymmetrical in nature. The general question here is: Where does this asymmetrical property come from? Chomsky (2000/1998, 27)—in recent work dealing with the Minimalist Program (MP)—suggests that such a one-sided syntactic relation (as would be necessitated by asymmetry) either (i) is imposed by legibility condition, or (ii) falls out in some natural way from the language computational processing itself. (i) speaks to what is often referred to as **function–argument** (semantics), where one element must dominate another due to some communicative functionality. (ii), a more formal treatment, may have mathematical underpinnings stipulating equations such that one element natural positions to a dominance-relation over another position. Both treatments—though emphases can be placed on one over the other—seem to play a role in asymmetry. The general question at hand goes as follows:

How do we get a syntactic Object {(O) {α, β,}} to have a specified word order, noting that phases must be labeled— In other words:

how do we get from abstract



…to more substantive



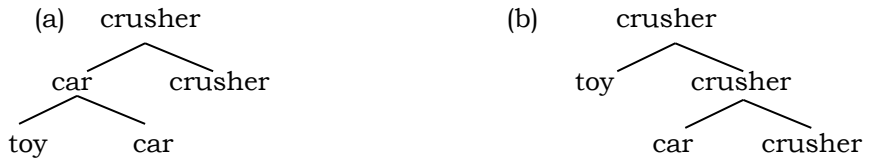
…where {α'} now takes dominance (in the way of c-command) over {β}?

The question and selection of such (leftward vs. rightward) dominance-relations quickly makes itself relevant when comparing such forms as below.

Does the form embed to the left?
[[Toy-car] crusher]

Does the form embed on the right?
[Toy [car-crusher]]

(6)



Clearly, there is a (semantic) argument-function distinction between the two forms, though, here not at the top of the tree (where both sell-out 'crusher'), but at the intermediate-level—viz., where the form on the left has 'car' which dominates 'toy car', and where the form on the right has 'crusher' which dominates 'car crusher'. The semantic reading distinctions are clear: a *toy-car crusher* is a 'real' crusher of toy cars, and a *toy car-crusher* is 'not a real' car crusher (but rather a toy crusher). But how does the design of language formulate exactly 'who dominates whom', when, in the first instance, all the computational machinery has is a rule that says combine (α) + (β)? We must find a way to derive either left or right embedding, and subsequent dominance from a simple flat structure that reveals— {(O) {α, β,}}.

3.3 Kayne's Antisymtry vs. flat sisterhood relations (word order)

Regarding flat sisterhood relations, it has been proposed (Kayne's *antisymmetry of syntax*, 1994) that in order for any syntactic string to jump-start its projection, some **movement,** even at the very basic level, has to have taken place—'that all items must move at least once on order to be visible to linearity'. Generally speaking, what we can say about this is in order for a Phrase (P) to project, the Head (H) of the P yielding the HP must establish itself in the way of some hierarchical status which is derived via movement. In other words, a movement operation secures even the very basic building-up of the lexical-categorical phrase—viz., a VP (Verb Phrase) [VP V_i [{V_i}{N}]] must determine what the H is and allow appropriate word order of that H. (The VP here shows the V moving out of a flat [V, N] structure in creating a dominant-label word as Head: [V [V, N]]). But which element should raise? Some element must contain lexical specific information—e.g, *function-argument* info, or, at the very least, a kind of dominance (whereby the Head word labels the phrase—that requires the given lexical feature to raise—so that if {α}-feature raises, then {α} dominates {β}. Otherwise, if there is no raising, then only sisterhood relations can hold with no dominance/word order. For instance, in (7-8) below we'll consider a potentially ambiguous string 'boat house' precisely this way, as an AdjP [AdjP [{adj-boat}, {n-house}]].

Somehow the projecting structure must show as *boat house* (and kind of a house) and not as *house boat* (a kind of a boat)–indicating that some basic level movement must have been secured in order to create the phrase [$boat_i$ [$boat_i$, house]]. Otherwise, a flat <logical and> structure of {boat, house//house, boat} would remain ambiguous as to what the H of the P would be. (We crucially note here that AGReement/Move creates *anti-*

sisterhood chains (where sisterhood chains might resemble what we find in pure reflective structures—e.g. *John*$_i$ *washed himself*$_i$, where *John* and *himself* are one in the same person and the verb *washed* serves as a kind of linking verb, connecting subject with object).
Before we go on to consider what Set-Merge looks like as **second instance** merger, let's recap what is at stake here regarding anti-symmetries found in natural language.

3.4 Compounding

Consider what we find with simple compounding below.
Compounds: [{α}[Black]] + [{β}[bird]] => [{α'} [Blackbird]] /blǽkbərd/
(where stress falls one the first syllable, and not the second. Both sisters {α, β} now appear not to be equal, at least regarding prosodic stress).
So, stress somehow has been co-opted by some hierarchy, or vice versa. Linear order may not be part of the conceptual-interface, but in fact, as Chomsky states (2005 p. 6), 'syntactic determinants of order fall within the phonological component'. English modifies head initial, so perhaps stress follows head initial (trochaic, stress initial) as opposed to French style head-final (iambic, stress final) where e.g., French modifiers are head final. (The morphologist amongst the readers here will not take too kindly to me delivering such to the hands of the phonology, but there seems to be some relationship here worth pursuing). In any case, what we need to spell-out here is that a simple merge-1 operation doesn't suffice in something as simple as compounding. A second merge-2 is required (perhaps sensitive to stress):

(7) Blackbird => (Second instance merger: Stress = Trochaic)

black bird => (First instance merger)

α' α β

black - bird

/ blǽk bə́rd/ (both stressed)

black$_i$ black$_i$ - bird

/blǽk bərd/ (only initial stressed)

Also note the following:

(8) 'Boat-house' vs. 'house-boat'

Merge-1 (First instance)

α β

boat - house

house - boat

(9) Boat-house

boat House-boat => (First instance merger)

α' α β

house/boat - boat/house => (Variable word order

boat$_i$ boat$_i$ - house => (Merge-2 showing movement)

'Boat-house' is shown above in Merge-2 with movement application of 'boat' out of sisterhood relation merge so as to determine the dominance-control Head: 'House' (boat-house is a kind of 'house', and not a kind of 'boat').
We note that with merge-1 there is no intrinsic directionality by design here since sisterhood relations are non-hierarchical. While there are two possible combining possibilities in (8), note that each pattern yields its own interpretation. For this to happen, a third syntactic element must be introduced into the derivation, an element that seeks out dominance-control (K) in order to label the phrase. Now, Merge involves three syntactic objects by necessity: S = {α, β, K} where {K} inserts as a syntactic object for dominance-control, relabeling the phrase/Set now as S= {α, β, K}.

(10) S = {α, β, K}. (Merge-2, Second instance)
But before we examine Merge-2 (Second instance), let's take a final close look at Merge-1 (first instance) as it is understood in the literature by the operation **Scan**.

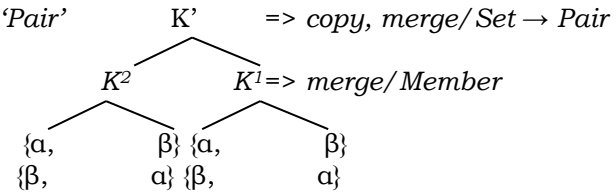
Merge-1 (First instance):

- This is raw external merge, though where the adding of a new syntactic object *doesn't* create a new structure: α, + β = {α, β,}.
- There is no Directionality (due to sisterhood relation).
- Word orders should be free to mix (due to now hierarchical status). This is indeed what we find in early child language data regarding mixed word order for Single Argument Structures (SAS) (Galasso, 2003).

3.5 Scan

First instance movement must eventually break from proto-merge and introduce hierarchy. In order to break this sisterhood (proto-merge) ambiguity, a 'giant leap forward' (in human evolutionary terms) is required which can break with <logical and> and provides us a template into hierarchy. We'll term the structure of this paradigm shift 'merge/Set' whereby the Set(S) is now accompanied by copy(S) (a sort of basic movement operation).

(11) *Step-2: 'merge/Set' → 'Pair'*



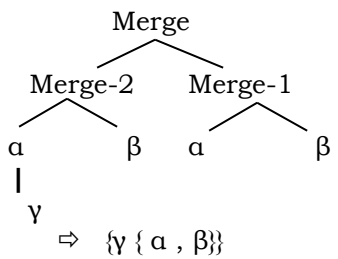
But before we can select which items of *(K1)* will be copied onto (*K2*), a kind of 'scan operation' must select and tag the syntactic object a license to move. Recall that within the {α, β} set, making-up the {α, β}, {α, β} pair, only one item will copy (not two) and one item will be left behind, rendering {{α}, α, β}. Such tagging provides a license for which item will undergo movement. Thus movement is a direct result of the **operation scan**.
Now, with this 'paradigm shift', what we have is a 'structural arrangement' whereby a copy (of two members) can be duplicated and serve as a host (landing position) for a *moved* element (not unlike what we find with gene splicing/copying, a reference made in the abstract). By 'copy', what we mean is that a syntactic object has been spliced and moved, with features now shared between two locations. In short, some sort of Movement with chain…

is required for K^2 to establish itself (though, there may be room to distinguish here between 'true syntactic movement' and what we'll come to call *fake-raising*, with the latter only involving a *shadow-copy* whenever the 'moved' item is merely adjoined to itself and where its thematic-argument structure remains binding. This is a form of 'semantic movement' which is spelled-out in step-2 of merge/Set above. (Recall our discussion above regarding 'adjectival stacking'. Well that too would involve a kind of semantic/local movement as made available via merge/Set. Merge/Set may in fact take-on *fake raising* qualities which we'll return to later on in the text). We later may also wish to distinguish this kind of 'copy movement' from true 'syntactic movement' (the former associated with a *Merge-base probe-goal* relation, and the latter with a *Move-based probe-goal* relation).

3.6 Second instance Merge

What seems to be needed is a second merge operation that sits on top of the first, yielding:

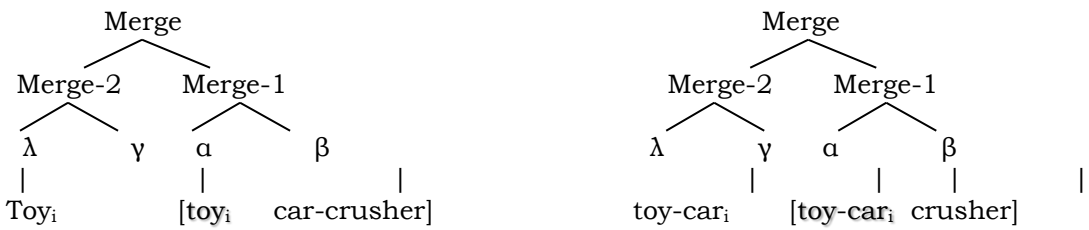
(12)



We note that this second merge arose out of a need to remove ambiguity from an otherwise (merge-1) flat-structure. For example, consider below how {α [toy]}, {β [car-crusher]} and {α [toy-car]}, {β [crusher]} could each come out of merge-1 as un-decomposed twin lexical items (α, β) (we crucially note that both structures are derivational in nature e.g., the compounding of [toy-car] as a lexical item, and derivational product of [[crush]er] as a lexical item). In order to break such sisterhood status, merge-2 has to employ, as seen in the merge-2 structure below:

Merge-2 acts in the following way: {γ, α, β} gives rise to logical hierarchy and anti-symmetric c-command.

(13) (a) Toy car-crusher vs. (b) Toy-car crusher



Without a second merge-2 operation, there would be no way to distinguish between the two examples:

i. a (toy) [toy [car-crusher]] (which is not a real car-crusher) (13a),

ii. a (real) [[toy-car] crusher] (which is a real crusher of toy-cars) (13b).

Flat merge sisters just can't give us the prerequisite information which speaks to hierarchy.
As we see from the discussion above, the simple recycling of sister-hoods multiple merge-1 gets us nowhere as all versions of merge-1 merely become sisters of sisters *ad infinitum*. Rather, a qualitative shift must surface in order to break the cycle.
The shift, as is often described within the Minimalist Program (MP) is stated as follows:

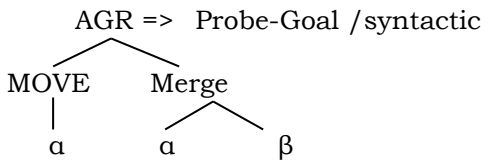
i. UG provides *Merge* (a free process, restrained semantically, but unrestrained syntactically).
ii. Then Merge expands to a *probe-goal relation* (restrained syntactically).

So in a nutshell, UG provides an optimal language design: We crucially note here two versions of probe-goal: one semantic-based leading to identification and labeling of head, and the one syntactic-based leading to AGR and feature checking.

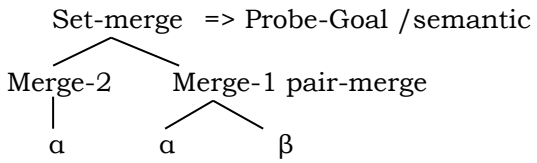
(i) Pair-Merge
(ii) Set-Merge => function-argument/**semantic** Probe-goal
(iii) AGR => **syntactic** Probe-goal.

Within MP terms, it is the 'probe-goal' which drives MOVE, restated below:

(14)



(15)

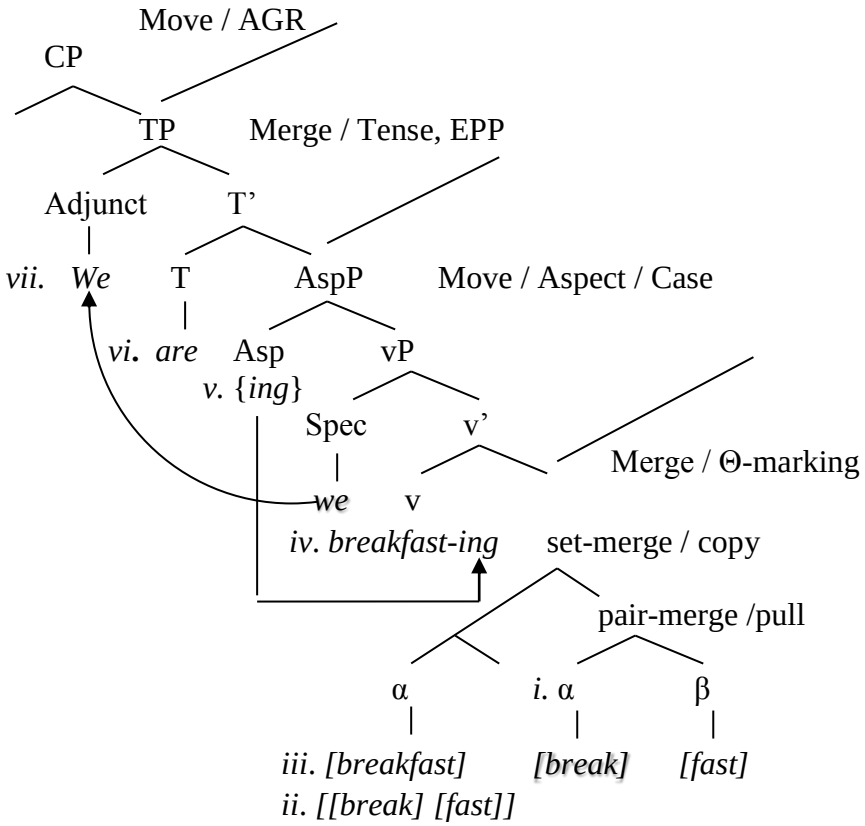


The **AGR** example is a structure of internal merge (or MOVE) whereby no new structure is created from out of the combination. But what we get is a surrogate step-mother {α} (what was once a mere sister {α}). The **Set-merge** example is a structure of complex external merge (Merge-2) whereby no new structure is created and copies are allowed to form. The difference between the two lies in whether or not the probe-goal seeks out a syntactic item/feature or a semantic item/feature.
This paper will be concerned with the nature of this probe-goal relation which drives internal merge (=MOVE).

Let's pause here to see how **pair vs. set-merge** would be applied along with a third operation MOVE in the following derivation. Let's take as a derivation the sentence *[We are breakfasting] with you tomorrow.*
We notate the tree below showing 'merge to move' sequencing:

Tree: *'We are breakfasting…'*

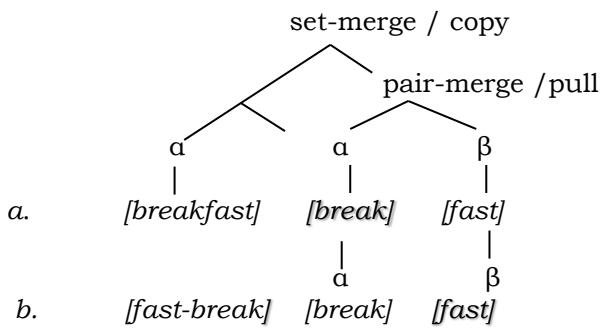
(16)



(i): Pair-merge: Items {α [break]}, {β [fast]} (to *break* your *fast*) are 'pulled' directly from the lexicon (no linear order): the two items under pure pair-merge are sisters and could either come to be interpreted as *break-fast* (V: to eat in the morning, N: what you eat in the morning) or *fast-break* (a basketball term).
(*Note* that it is not until 'Set-merge' {α {α, β}} that we obtain word order directionality).

(17) *a* = 'breakfast'

b = 'fast-break'



What the Set-merge allows us to do is create an overlapping template upon which copy can play-out. If we have as a membership which includes $\{\alpha, \beta\}_2$, $\{\alpha, \beta\}_1$, then we have a parallel structure in place for an item to break sisterhood and be promoted into a dominance position. Of course, what that item is will be determined by C-I (the semantic/conceptual-intentional interface), with some residual factors bleeding in from phonology (since syntactic determinants of order fall within the phonological component where prosodic stress may select and label and head).

The operation 'pair-merge' will be later viewed as a possible account for variable word order (SV, VS, OV, VO) found amongst Single Argument Structures (SASs) in early child speech (Galasso, 2003). On the other hand, Double Argument Structures (DASs) seem to fix word order in child speech. The SAS vs. DAS templates suggest an overlap with pair-merge vs. set-merge respectively, whereby DAS requires asymmetrical c-command to be spread across the DAS [Spec/adjunct [Head-Comp]] (with Head placing either initial or final based on head directionality parameter). Hence, it seems DASs necessarily trigger hierarchy out of design. 'Set-merge' (and not pair-merge) is defined as a structure which allows the performance of some minimal 'probe-goal' operation to act upon set-membership for the sole purposes of identity. This probe-goal relation is different than what we find regarding MOVE since this Merge-probe-goal seeks out function-arguments for identity purposes—i.e., determining which element will become the head. 'Move-based' Probe-goal rather seeks out formal features for reasoning having to do with check-off.

Otherwise, if no Movement were activated for K^2, simply adding a new K would suffice, and hence, we'd be doomed to recycling flat structures. (In this sense, K^2 is actually prime K' of K^1). So, any element which undergoes Move must contain a memory index of their lexical specific features so that if *copy* is activated, a *chain* can be formed. *Raising* (via movement) is in fact a 'chain-forming' mechanism which allows a copy of the raised element to persist lower down in the tree. In this way, if, say, '{α}-feature' raises, then {α} dominates {β} and fixed word order is possible. But what motivates Copy/MOVE? In short, the construction of phrase requires Copy/MOVE. In theoretical terms, the formation of a phrase comes to us as a bi-product of a syntactic **chain** (of a moved item). Hence, a Phrase (with all its classical trappings) is nothing more than a syntactic Agreement (AGR) relation whereby a first order **probe-goal** relation holds between (i) a singular item and its formal position higher-up in the phrasal tree and (ii) the feature properties of the item to be moved. We spell-out here that there is a dual probe-goal relation which contains two distinct operations (although both forms create phrases):

(ii): Set-merge: 'anti-sister/c-command' provokes a 'copy' of one of the 'pulled' item. The operation 'copy' forces a selection of one of the two pulled items to serve as 'Head'—copy thus creates function-argument status. With newly created c-command, coupled with a 'head status' (and head directionality parameter), we now can derive what was once originally a compound *[[to break] [a fast]]* to lexicalized *[[break] fast],* with *break* serving as verbal head. We now derive *[breakfast]* (to eat in the

morning) which becomes an unproductive and undecomposed new lexical item, used here as a verb. Note that it is here at Set-merge that we lose independent productivity of isolated lexical items—hence, set-merge is a quasi-grammatical operation (since it is move/copy related) and may be *semi-productive* at best (as seen with derivational morphology). Set-merge yields function-argument status whereby word-order is imposed once head directionality parameter is set [+/- Head initial]. We take it that word order naturally falls out of the computational design of set-merge in conjunction with the head directionality parameter, given that all trees, by definition, are binary branching. (Note that a tertiary tree could not establish such word-order in this manner).

(iii) The verb *[breakfast]* raises to **(iv)** light verb vP (via MOVE) and gets into a position whereby the verb-stem can receive **(v)** an Aspect affix {ing} from the Aspect Phrase (AspP), a process known as 'affix-lowering'. Since T in English is not strong enough to force verb raising, the verb must stop at Asp.

(vi) The tensed verb [+Present] *are* gets pulled directly from the lexicon in its bare form and inserts directly into head of T. (There is no agreement yet at this point of derivation between the verb and subject. But once CP projects, phi-feature AGReement is established between verb and subject).

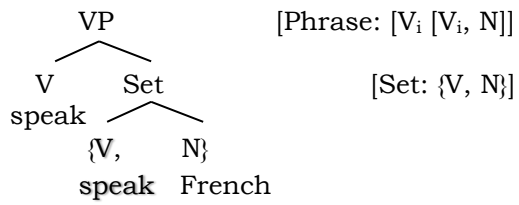
(vii) The subject insert via adjunction into Spec/adjunct of T (due to an EPP feature on T which stipulates that all clauses must have a syntactic subject).

4. Probe-Goal Relations

(i) **Semantic Probe-Goal**: 'merge/Set' (external/Merge) involves three syntactic objects: {α, {α, β}} (the item which moves forms the Head). The rending of a **Lexical Phrase** is now permitted with hierarchy as sisterhood status is now broken.

⇨ ***Lexical Phrase-Level:***

(18)



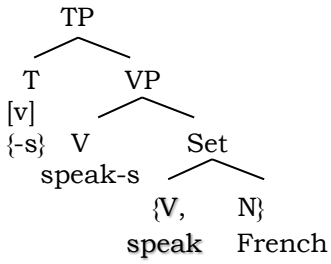
(ii) **Syntactic Probe-Goal**: 'merge/Pair' (=Move) involves three syntactic Sets and renders a **Functional Phrase** via a pair of Sets (S):

{α, β}, {β, α} and {α, {α, β}} or {β {β, α}}.

Token example: [Daddy [VP speak French]].

⇨ ***Functional Phrase-Level:***

(19)



[Pair: [T [v]] [S: {V, N}]]

Token example: [TP Daddy [T [v] {-s} [VP speak-s French]]].

In sum, there are two probe-goal relations:

(20) **<u>Two probe-goal operations:</u>**

(i) *Set-Merge-based* 'Probe-goal' to establish identity among set-membership and thus create labeling of phrase.
(ii) *Move-based* 'Probe-goal' motivating raising and stripping-off of formal features.

Regarding this *dual probe-goal relation*, we can pursue this route with a bit more clarity as to what kind of phrase gets generated, and what the role of the specific phrase is. Recall that we assume that AGR and MOVE are related in the sense that the relationship is what drives tree expansion (upward)—by creating Head-to-Head percolation of features. But what of Case, a traditional functional feature housed within a functional phrase: How is Case generated? Certainly, whatever we make of Case, we have to assert that it is the structural result of merge/Pair and that some movement is involved on a syntactic level. By taking the above tact, what we can say is that Case is generate (above VP) within a light verb (vP) by suggesting that the item/(subject), bottom-up, moves up the tree to Spec of vP in order to check-off a formal Case feature there within vP, or else enter into some kind of a top-down Probe-Goal relation within vP. (**Note.* We crucially assume here, contrary to most theoretical assumptions, that Case is assigned within vP, a phrase which straddles both the lexical/functional domain, since Case likewise seems to straddle both domains). A treelet structure then would provide the configuration for Case/vP. Theory internal assumptions might also mark Case as having a hybrid +/ interpretable status since Case seems

to behave both lexically/semantic in terms of argument structure/inherent case, as well as functionally/syntactic in terms of structural case.
Accommodating this hybrid approach, we'll assume that Case has a two-prong configuration:

(21) **Hybrid Approach to Case:**

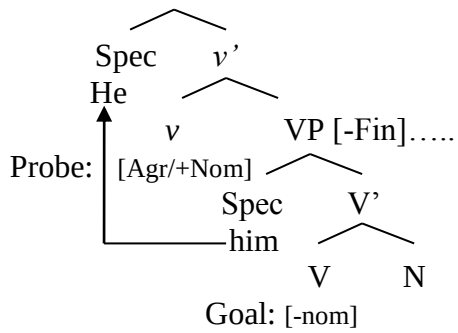
(i) Nominative Case, when functional, generates under vP with an appropriate *syntactic* Probe-Goal relation specific to the Head of vP showing [+Finiteness] properties. (Heads of *light verbs* mark for [+Nom] Case).

(ii) Accusative Case, when lexically, generates under VP with an appropriate *semantic* Probe-Goal relation specific to the Head of VP showing [Non-Finiteness] properties, (or when marked as default).

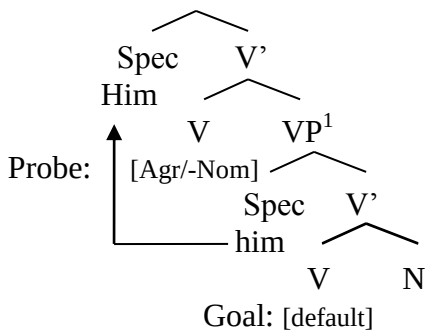
In any event, syntactic Case will be the result of an Internal MOVE operation, e.g., since [+Nom] must enter into a syntactic Probe-Goal relation which is MOVE-based. Consider below how the treelet structures might capture Case within the framework of Merge over MOVE:

MOVE Structures for Case:

(22) *Light verb* Token example: *He speaks French.*



(23) *VP-Shell* Token example: *Him speak French.*



Regarding Merge over MOVE, one interesting implication here is that Case is the pure result of MOVE, not Merge.

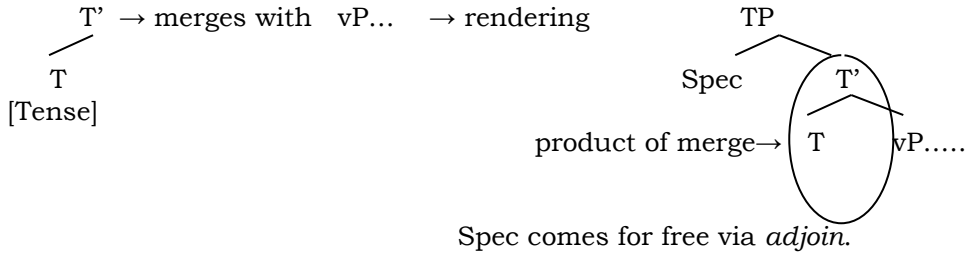
But what of Tense? Is Tense MOVE or Merge based? Well, as a traditional functional category, Tense might be the exception to the otherwise rule which states that all functional categories result from internal

MOVE. We know that some displacement/movement must take place for Tense, but which: internal or external? Well if we can imagine such treelet structures being partial Heads, parts of free-floating trees (and autonomous in nature), then we might devise a theory which states that the TP (Tense Phrase) Head T of TP attaches (top-down, as in an adjunction process) via merge to the lower vP>VP, this allowing a spec position for a vP case marked subject to raise up and position with Spec of TP in order to satisfy a theory internal stipulation that calls for all clauses to have a subject as defined by the Extended Projection Principle (EPP). (We'll assume, following Kaye, that Specs are simply adjunct branches which naturally form from out of Heads, and that there could be in fact multi-specs branching out of a single Head). Then such a detached TP itself would serve as a Probe (a phrasal probe) looking for its Goal (as a Head seeks out a Complement within a phrase).

Let's following the merge sequences below for Tense:

Merge structure for Tense:

(24) T' → merges with vP… → rendering



There is some support for such a Merge treatment of Tense given that Chomsky has classified TP as both non-phase and [+Interpretable], unlike vP which is considered a phrase and, to a large degree, [-Interpretable].

So now we have a merge structure TP which sits on top of a MOVE structure vP:

(25) Merge TP / MOVE vP / Merge VP….

CP, also a MOVE-based Phase, would then finally sit on top of merged TP:

(26) Move CP > Merge TP > Move vP >Merge VP….

(*Note* the sequence bottom-up of merge to move alternations: <merge, move<merge, merge<move<merge, move<merge<move<merge)

This is the sequence of 'merge then move' structure we find in (16) above (in our 'we are eating breakfast' example).
This is all well and good: any such probe-goal relation could fall within either Merge or Move. Fine! But in the first instance, which of the two elements should raise, say, from out of the lexical Probe-Goal Set S: {V, N}? Well here, it must be said that some element must contain lexical/functional specific information (*function-argument* info for the former and *syntactic* info for the latter) that requires the given lexical/functional feature to raise—so

that if {α}-feature raises, then {α} dominates {β}. Otherwise, if there is no raising, then only sisterhood relations can hold with no dominance/word order. Note that even within the VP-shell, some hierarchical structure is mandated (as is seen in *ergative predicates,* such as our 'rolled the ball' structure below which too is a VP-shell construction).
To be clear here, what we are saying is that whenever there is a phrase, with its proper infrastructure containing a Probe-Goal or true Spec-Head-Complement configuration, then there must have been some movement operation in order to break the otherwise flat sisterhood status and gain hierarchical structure. If the moved item in question is lexical—i.e, an item entering either a lexical Probe-Goal or Spec-Head-Comp configuration—than a *lexical phrase* is created (NP, VP, AdjP, PP). If the moved item is functional—i.e., and item entering into a syntactic Probe-Goal or Spec-Head configuration—than a *functional phrase* is created (CP>TP>vP). We crucially note here that it is AGReement/Move that drives tree expansion (upward), and that creates all *anti-sisterhood* chains (where sisterhood chains might resemble what we find in pure reflective structures—e.g. *John*$_i$ *washed himself*$_i$, where *John* and *himself* are one in the same person and the verb *washed* serves as a kind of linking verb, connecting subject with object).

5. Move Relations

5.1 **Move (internal merge)**

Move is defined as 'EXPAND' whereby a syntactic tree expands ever further upward, as motivated by the need to check-off formal, non-interpretable features along the way (such as the {masculine, 3p, singular} bundle of features found with the Spec-Comp AGR relation., cf. *John washed himself*). By merely expanding a Phrase/Phases by MOVE, <u>critically, no new material is created</u>. (The co-indexing of *John* with *himself* creates no new material). Like Set-merge, Move involves hierarchical (non-sisterhood) relations which result out of some raising—e.g., Spec/Head$_i$ of XP^1 → Spec/Head$_i$ of [XP^2 [XP^1]]. The crucial distinction between Set-merge (external) vs. MOVE (internal) is that MOVE-based non-sisterhood relations are purely syntactic in origin while Set-merge non-sisterhood relations are thematic:

(34) **Properties of Move**

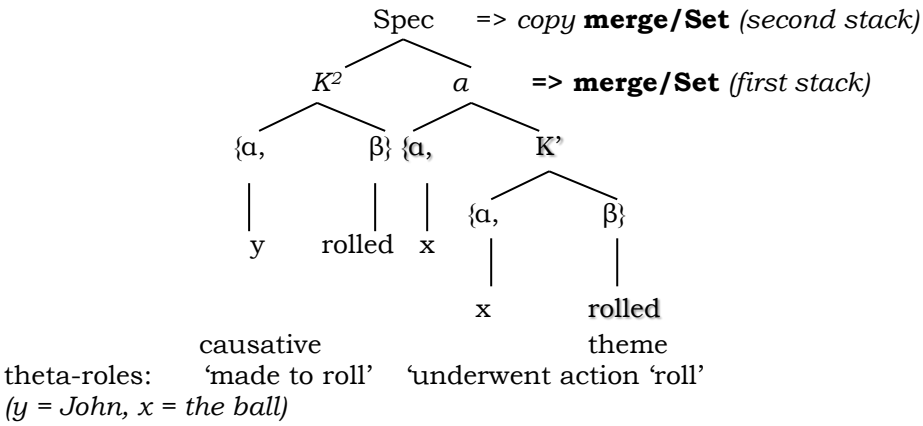
a. Move involves binding and coreference of potential moved item. Thus, pronouns may take on (better than chance) distant binding/coreferential readings (e.g., *John*$_i$ *took the mirror and looked at *him*$_i$ */ him*$_j$), where *himself*$_i$ becomes employed for binding and coreference.
b. Given (a), pronouns under Move carry *structural argument* status.
c. Move (i) takes a previously formed compound structure {α, β} from Merge, and (ii) forms an expanded version yielding {γ} where γ = {α$_i$,{α$_i$, β}}.
d. Move is necessarily 'recursive' in nature.
e. Move carries a feature specificity of [+Displacement].
f. Move fixes word order e.g., via [+/-Head initial] parameterization.

5.2 ***External move***

External move is what is at work when the verb 'roll' moves up the tree to cover its theta-markings (ergative predicates):

e.g., *[John rolled$_i$ [the ball rolled$_i$ down the hill]]*

(27)

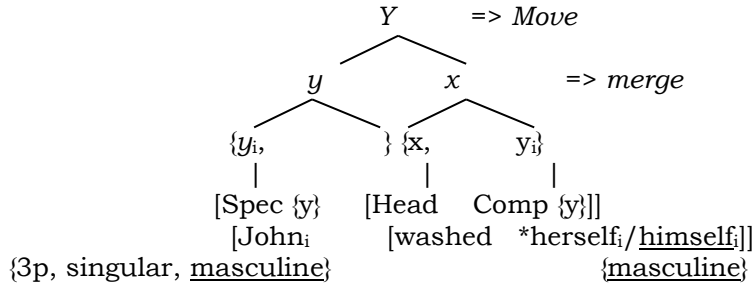


Also note that oft-cited Double Auxiliary Copy constructs typically attested in early child speech may similarly be accounted for by using an overlap copy set-merge/pair merge template—e.g., *Can its wheels can spin?, Is the steam is hot*? (Data cited in Radford 2004, 156). In such copy constructs, what seems to be at work is that the moved/copied set-merge Auxiliaries *can/is* simply fail to erase within in the lower pair-merge.

5.3 ***Internal move***

Internal move is at work whenever a Comp and Spec would have to **AGRee** (Agreement features). MOVE is generated in order to check features entering into an AGR-relation. In short, MOVE is AGR:

(28)



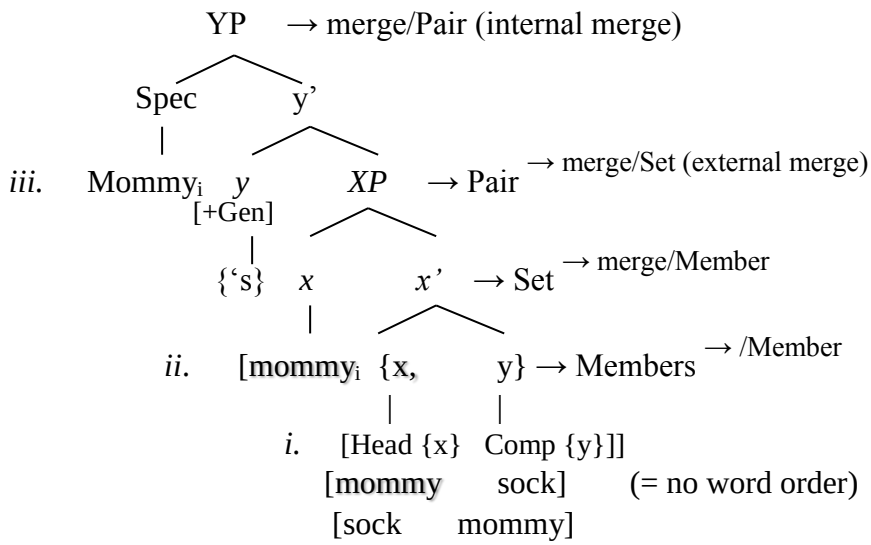
Or, when agreement via an inflection is generated—as with possessive [Genitive] constructs showing {'s} inflection:

Of interest here is the fact that it is NOT the reflexive feature itself which motivates internal move (recall that reflexives could be captured within external merge as shown above). Rather, it is the fact that an AGReement mechanism has now been introduced which forces internal move. In this sense, Reflexive co-indexing is deemed semantic/referential (entails *local*

binding) whereas Agreement is syntactic/discourse (entails *distant binding*). This is a crucial distinction to be made).

Note below how the AGR of Possessive/Genitive feature would force MOVE:

(29)



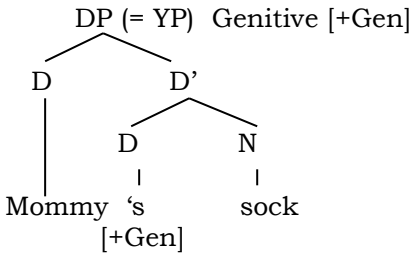
i. Shows members pulled from the lexicon (*mommy, sock*). These items then make-up a set <x'>, or <S {x mommy, y sock}>. There is yet no word order at this point nor is there any thematic hierarchical structure. (At the very most, what we would have is an NP (Noun Phrase) which would contain two nouns (both sisters), each item as its own possible head. So, even for an NP-analysis, there would be no word order as specified via a +/- Head initial parameter). (See (32) below for example of <x'> 'wine bottle' vs <YP> 'bottle of wine').

ii. Shows thematic hierarchical structure related to lexical/thematics. Hence, there is word order. There is yet no inflectional morphology. (For an NP analysis, structure appears due to the item 'mommy' moving out of a flat sister relation and now becoming adjectival in its derivational formation—e.g., 'a mommy sock' (a kind of sock).

iii. Shows higher functional projection serving as a site for syntactic projections (such as inflectional morphology).

The structure in (29) above is reduced to the more commonly notated DP below:

(30)

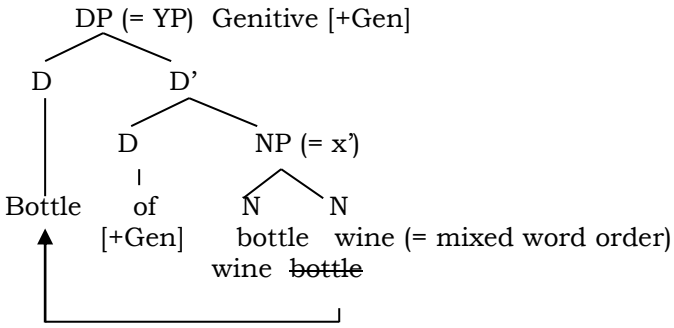


In (28) above, it is commonly understood that the Comp(lementizer) *himself* is c-commanded via Agree and is bound by the Spec(ifier) *John*. The verb *wash* may in fact carry such AGR material and serve as the probe for the Comp goal. In (29), the genitive/possessive {'s} projects from out of a DP, which places within the tree above an NP. Both examples of movement are syntactic in nature and may not alter the semantics of a given counterpart utterance: though, later on we will address a semantic/syntactic distinction between, say—e.g…,

(31) 'Wine bottle' [NP [N wine] [N bottle]] (= merge/Set),
vs.
'Bottle of wine' [DP Bottle$_i$ of [NP wine bottle$_i$]] (= merge/Pair)…

where apparently MOVE does alter the semantic interpretation.

(32)



Following the logic here, it would seem to be the case that very young child utterances consisting of exclusive Single Argument Structures (SAS) would provide no outlet for hierarchical structure, an only *pair-merge* would suffice. On the other hand, Double Argument Structures (DAS), by definition of them coming out of a binary branching structure, would have to involve so sort of copy, thus yielding *set-merge* naturally from out of design. The fact that we find fixed word order only at the set-merge stage reflects this hierarchical advancement in structure. In sum: set-merge creates a position for a moved element to enter and potentially become a head. Once that takes place, the parameter [+/-Head initial] gets triggered. Prior to this, there can be no head since there is no identification or labeling (since all elements within pair-merge are equal sisters). Young English children at the pair-merge stage

should be able to fluctuate between saying things like [wine bottle] and [bottle wine]. There is much child language data to this effect.

Questions here are not trivial. For instance, does external merge come for free, fall out of design? Well, pair-merge certainly does! However, there could be two views regarding set-merge: (i) set-merge may in fact be postulated (like the EPP property) in order to secure a break in sisterhood symmetry, (since language must be recursive and hierarchical), or (ii) set-merge, like gene-copy in our DNA metaphor, comes for free as part of a well designed computational system (a computational system that might not have evolved in an optimal way to serve communicative, but rather optimal in nature for reasons having to do with mental (internal) language (thinking, planning, consequence of actions, etc.). (It seems, following Chomsky in his recent work, that the latter is to be preferred. We will assume this here, although nothing hinges on it, and suggest that it is only 'set-merge' which yields notions such as *term-of, dominates*...establishing first only local/adjacent anti-sisterhood relations. These relations then become even more articulated and can cover a longer distance by c-command/Agree. In fact [+/-distance] of relation could be used as a measuring stick for defining Set-merge (semantics) over Move (syntax), where the former is more constrained by locality (intra-phrase) and where the latter is free to reign over a distance (inter-phrase).

There is now a 'two-prong' copy theory of movement:

(33) (i) Local, Set-merge $\{\alpha, \beta\}$, $\{\alpha, \beta\}$ with probe-goal/semantic (external merge),
(ii) Distant, Move $\{y_i, \{x, y_i\}\}$ with probe-goal/syntax (internal merge).

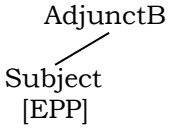
Hence, both forms of merge come for free and fall out of computational design. Set-merge creates local semantic hierarchy, whereas Move creates distant syntactic displacement. Both satisfy conditions imposed by the C-I interface (conceptual-intentional interface). This notion of 'local vs. distance' will overlap with the morphological cline given below showing [+/-productivity] having to do with Derivational vs. Inflectional morphology. What we'll suggest here is that derivational morphology is 'local' Set-merge related and semantically orientated (as is compounding), whereas inflectional morphology is 'distant' MOVE-related.

6. *Treelet Structures*

When you pull an adjunct-subject from out of the lexicon, the adjunct branch (the treelet branch of structure) is pulled along with the item. (See Janet Fodor 1998 for a possible treatment of this involving parameterization). Hence, adjunct branches are stored in the lexicon as pieces of stored lexical information. This is very different, we believe, from how information regarding Specifier and Complement positions are stored—we believe they come top-down from out of the design of the computational system itself. Heads seem to be free floaters and too may be stored as treelet branches inside the lexicon. Such a treatment seems to suggest that *adjuncts* are escape hatches for items which must be inserted late in a

derivation, while s*pecifiers* are escape hatches for items which have already be generated lower down in the derivation, but then must raise upward in order to check some formal feature. Both Adjuncts and Specifiers constitute an **edge feature** since Heads are free floaters. Complements, on the other hand, do not provoke movement nor do they create new structure, and at times, they may become frozen place holders for unmoved items. Such frozen items face 'sudden death' which means they can no longer enjoy upward mobility and thus must proceed to spell-out. Much of what we'll say about early child structures falls within the scope of 'early death' (the tile of the paper). The notion here, following Roeper, will be that only movement delays transfer to spell-out and keeps a structure alive for further derivation (via upward mobility).

(35)



Following this discussion, we assume an MP treatment and suggest that only vP (light verb) and CP—move-related phrase, and what in current MP terms are called **phases**—have edge-feature positions. Namely, only vP and CP contain a Spec-Head. vP and CP are phases. TP and VP (non-move phrases) are not phases and bespeak of notions related to merge and later lexical insertion.

TP and VP—both merge-related phrases—have no Spec positions of their own and are required to draw an Adjunct Branch (AdjuB) along with the adjunct from out of the lexicon. vP and CP—both move-related phases—on the other hand, inherently are structured with Spec positions (Specs fall out of design) which allows for a subject (or any other spec positioned item) from below to move up the tree and insert into a higher Spec position.

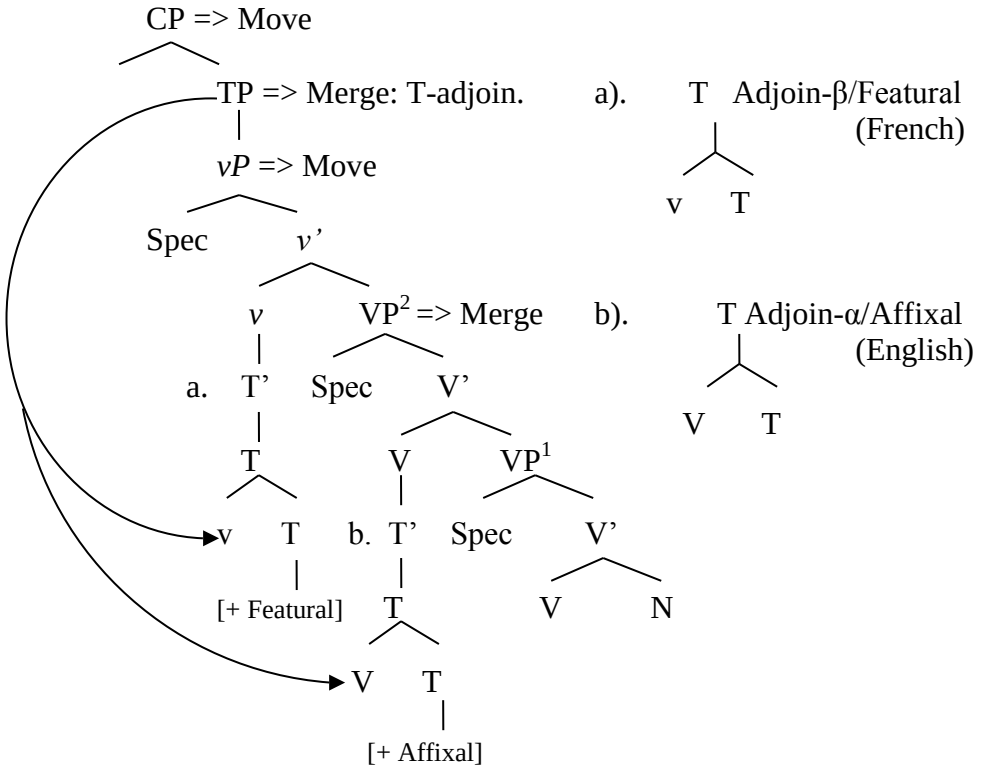
There is however equally shared Head raising for the four phrases, which for all intents and purposes, is determined upon whether or not a head feature is strong or weak [+ strong => + head raising] (French type), [-strong => - head raising] (English type), with the former actually being an instance of late lexical insertion. (We'll return to French-style later lexical insertion of main verbs later-on when we talk about *featural vs. affixal* features).

6.1 **'Merge over Move' in Theory (MoM)**

We assume only *vP* and CP in nature to be the kind of projection [+MOVE] which can 'expand' the syntactic tree upward (from out of base-generated/thematic VP). Tree expansion is motivated by MOVE, the need to check-off formal uninterpretable [-Interp] functional features. Under our current proposal, the traditional Tense Phrase (TP) carries [–MOVE]/[+Interp] properties, and thus TP may carry the status of a defective functional phrase/clause, as well as not having the status of a phrase. In this way, TP is rather captured in the tree (36) below as a mere X' (Head) Adjunct-projection (void of its own Spec-Comp relation).

The syntactic Tree under MOM

(36)

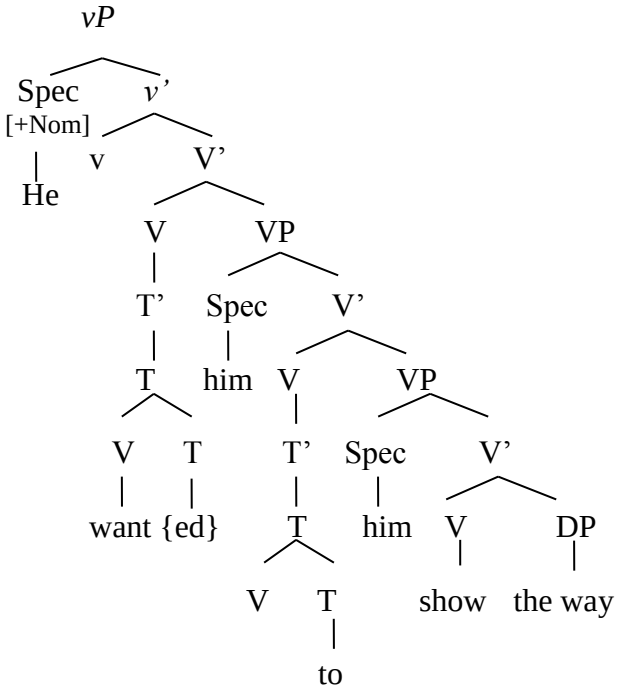


The tree in (36) shows an intrinsic bottom-up pattern of Merge/Move/Merge/Move—

Move (CP/AGR)>
T-Merger (TP/Tense)>
Move (vP/Case)>
Merge (VP/θ)

T-Merger can apply multiple times whenever a host for a T-particle is needed, as in infinitive small clause formations—e.g., *He wanted him to show the way / He wanted to show him the way.* Note that Nominative Case is now considered to be a formal feature housed within the *light verb vP*. Accusative Case is the property of Spec-VP.

(37) ***Twin Affixal-Merger:***



T-Merger:

a). First: Adjoin-α attaches to T' and merges it to V (of outer VP[2]). The Tense/Inflection here is +Affixal [+AF] / -Featural [-F], as shown with English [+Bare Verb] verbal morphology—e.g., visit-ed, [[visit] {ed}]. We follow Lasnik (2007) on verbal morphology and state that *Affixal INFL must merge with a V, a PF process (distinct from head movement) demanding adjacency* (p. 267).

> *Nb. Only past tense {ed} carries a Tense* feature. The {s}, as in third person/singular verbal [speak] {s}] is to be reconsidered as a bundle of phi-features (person/number) which mark AGReement. {s} therefore is not a Tense marker under our analysis, *pace* traditional analysis. In our view, English only marks for present tense via a zero allomorph [[v] {-Ø}]: *I/you/we/they speak-Ø.*

T-Merger:

b). Second: Adjoin-β attaches T' and merges it to *v* (*light verb*). The Tense/Inflection here is [+Featural] / [-AF], as shown with French [-Bare Verb] verbal morphology—e,g., [parles] *[[parl]-Ø], or in English Auxiliary verbs *have* and *be*, which behave like French verbs (i.e., are pulled directly from the lexicon and come fully inflected, and do not have a bare stem status).

> *Nb.* The fact that Affixal merge shows up in the tree under VP speaks to the notion that 'affixal-Merge' (Adjoin-α) is an adjacent operation which cannot undergo true syntactic movement, while 'featural-Merge' (Adjoin-β) which is housed under the light verb, may be underwritten by at least some covert movement at LF, though still remaining a merge operation.

Languages differ (strong vs. weak) over where I(nflection) [I] Spell-out applies of an item {α} in relation to a derivation at LF. As we see it, this can be reduced to a parameter of [+overt, MOVE] vs. [-overt, Merge]. The former (e.g., head movement) is syntactic in nature, is much less restrained by locality conditions than is the latter (merge), with merge being actually more restrained by locality. In other words, overt movement such as head movement abides by syntactic move-α (in GB terms) and may be more 'free', whereas covert movement, underwritten by LF, requires more in the way of adjacency locality. (See Bošković (1996) for discussion of 'LF vs. Overt' movement (as in English vs. French respectively)).

The above [+/-overt then MOVE/Merge] parameter can be summarized:

(38) a) For strong & overt verb-raising languages (French-type): {α} carries full [I].

The main V(erb) picks-up the featural T(ense) via Overt-MOVE (Head movement), and attaches [V, I]. [I] spell-out of derivation is applied overtly at PF *before* LF split.

b) For weak & covert verb-raising languages (English-type): {α} is a bare uninflected form. PF rules apply to phonological full interpretation. [I] spell-out of derivation, now a phonological string, is applied at PF, and covertly *after* LF split.

AGReement has the property '+F(eatural)': [AGR [+F]]. AGR is not AF(fixal) [AF] in nature.

=> AGR is [+F] / [-AF]

AGR, having a general property [+Featural] is similar to what we find also with French Tense (main verbs). Hence, both French T and AGR are Featural, whereas only English AGR is Featural. English (main verb) T is Affixal.

The stipulation here is that [+F] is purely INFLectional in nature and can head a non-trivial chain via con-indexing (at LF). Hence, [+F] is *per excellent* an exclusive 'probe-goal' Move operation. [+AF], on the other hand, is an exclusive property of Merge which must adhere to adjacency conditions (covertly at PF). In sum, AGR is MOVE generated (and is free to enter into long distance relationships via binding/co-indexing), while all other operations (AF, and otherwise, by default) are MERGE generated, and thus are restricted to adjacency conditions of locality at PF. Only AGR forces MOVE. In this general sense, we can keep to the spirit of 'Merge over Move' (MOM), which is desirable for reasons having to do with economy of derivation, a leading tenant of MP.

Regarding MOVE, we follow Tom Roeper's recent hypothesis which states that only MOVE (not Merge) delays transfer of the phase by extending the syntactic tree upward for reasons having to do with [Semantic] discourse

and scope, as well as [Syntactic] Feature Checking of AGR-related Head (typically to a Spec-Head configuration of the higher functional category CP (i.e., Head movement)). Note that we dispense with the notion that TP is a functional phrase since it cannot productively host a spec-head configuration for purposes of extending the tree via chain co-indexing. We extend the properties of AGR now as [+F] & [+chain]. While T-Head is motivated by the Tense feature, the Spec-of-TP is rather posited as a last resort measure, for theory internal reasons, in order to save a derivation—viz., that all clauses must have subjects (EPP), and where whether or not the subject is forced to overtly surface reduces to a setting of the null-subject parameter). Hence, while T' is necessary to project a T-head, there is no reason other than internal stipulation for there to be a Spec-TP structure.
When AGR is generated within CP, AGR serves as a Probe for Goal 'phi-Features' (Φ-F(eatures)) such as *person/number agreement*.

(39)

```
        CP/AGR
       /      \
Spec        C'
            [+Agr]
              |
            Φ-F => [Per] (Person), [Num] (Number)
            [+Chain]
```

When AGR is generated within the *light verb* vP, AGR serves as a Probe for Goal 'Finite-Features' (*f*-features) such as *Case* [+Nom] (Nominative) and *DP* [+Def] (Definiteness), [+Fin] (Finiteness).

(40)

```
        vP/AGR
       /      \
Spec        v'
            [+Agr]
              |
            f-F => Case [+Nom], [Def], [Fin]
            [+Chain]
```

Hence, the stipulation here is that the *light verb* vP houses all relevant declarative subject-predicate information except Φ-features and [T]ense—where Φ-features get handed-off from C to v, (skipping T altogether since TP is not a phase) and Tense must adjoin from above to vP via lexical insertion (a consequence of LF-Merger). In this sense, Tense is the only formal feature which is exclusively affixal/merge in nature (and not inflectional/move). (We note here how French verbs, as well as English auxiliaries *have* and *be,* already come fully inflected from out of the lexicon via V-raising prior to LFG. The lexical items insert as already established 'featural' undecomposed chunks).

English Tense has the property '-F / +AFfixal: [T [+AF]], => T is [-F]

English Tense is Affixal in nature as a result of it not being housed within a phase. As just noted, TP is a sole product of LF-Merger (Spec-of-TP is

projected due to internal theory purposes such as EPP and Null subject parameter). Head of T—locus for Tense, though importantly not associated with Finiteness—directs the probe in T to seek out a [+AF] Head within the predicate. This is applied via LF-merger/adjunction. LF-merger (different from PF head movement) takes place as long as adjacency is obtained between the two merging items. If so, the [+AF] requirement is satisfied.
We note how French (so called 'Strong) verbs come fully inflected from out of the lexicon—i.e., French verbs cannot take the shape of bare stems (even the infinitive must be inflected). This suggests that T-features in French are [+F]/[-AFF]—i.e., Featural, not Affixal in nature—and are covertly drawn together pre-spell-out, prior to PF/LF split via Head movement. This 'overt'/'post-spell-out-head movement' characteristic is similar to what we find regarding English Auxiliaries *have* (*have/has, had*) and *be* (*am/are/is, was/were*), where such English Auxiliary verbs too are drawn directly from the lexicon as one undecomposed chunk (i.e, no bare stems). In our sense, English main verbs (which are traditionally assumed to be +Featural/+INFLectional), are rather reconsidered here as being more in line with French verbs, at least with regards to how English main verbs exhibit Tense (notwithstanding the fact the phi-features may remain featural in nature and seek out INFL). Our claim here is that as a property of UG, Tense is an interpretable feature [+Interp] which carries semantic [SEM] weight. Both of these properties (Interp & SEM) uphold a UG principle of being lexical based.

> *Note:* The fact that {ed} shows-up as an inflection has more to do with PF considerations that with LF: the {ed} may in fact function as a surface clitic marker of sorts which must attach to the bare verb stem. Our focus here is that {ed} would carry lexical weight with the quasi lexical meaning of say *yesterday*. Note how the possessive {'s}, also traditionally considered an INFL marker, perhaps has undergone similar *clitic reshaping* from historical Genitive *his* (e.g, [*Tom [his wife]]* = [*Tom['s wife]]*).

(41) <u>There are two interesting notes here regarding {ed}:</u>

(a) It seems that past {ed} doesn't enter into a strict agreement relation—viz., there seems to be no necessary co-indexing between two items with regards to binding of past tense {ed} This is very unlike what we do find with regards to true binding/co-indexing, such as reflexives—e.g.,

(John$_i$ washed himself$_i$/*herself$_i$/*him$_i$/him$_j$/her$_j$).

The closest Tense comes to co-indexing might be what we find with modal/tense relations:

e.g., (i) Whenever Mary *went* to Paris, she *would* buy/*buys wine
(ii) Whenever Mary *goes* to Paris, she *buys*/*would buy wine.

(b) Tense {ed} can go missing (irregular verbs), while {s} cannot.

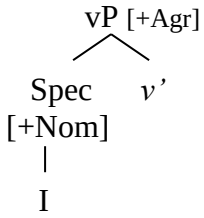
(c) Whether or not {ed} once made-up a lexical item is irrelevant here. The underlining processing might be the same.

Note. We take exception with person/number Agreement as well as Case as being potentially true INFL markers (unlike past Tense {ed}). In fact, the present tense {-s} may in fact only mark for 3person/-Plural and not Present tense. We note how the progressive inflectional {-ing} aspect marker is used over {-s}—e.g., *John play-s the guitar* (may not indicate present tense), while *John is play-ing the guitar* (indeed marks for present tense]. In any event, what we are considering here is the notion that past tense {ed} is a process of lexicalization via merge, and is not a true featural inflectional marker. Our notion that{ed} is affixal puts it on a par with lexical-item merge (a PF adjacency condition similar to what we find with the compounding of the word *blackbird,* etc., as shown in below). On the other hand, true featural INFL instigates MOVE and allows the item to move up and cross several phrase boundaries (via Successive Cyclicity).

Lexical items differ from inflectional affixes in that lexical items are phonological strings (so called chunks) and therefore must be [+AF / -F]. Lexical items thus defined must project via adjacent PF-merger, whereby a lexical item-α [*black*], attached to lexical item-β [*bird*] in forming e.g., a compound [*blackbird* [[*black*][*bird*]]] (a stipulation that holds for all lexical items which get pulled from the lexicon in forming a numeration. Note that this same compounding mechanism may also be involved with larger strings such as phases once they have transferred to spell-out and have come out of LF. We will return to this notion later-on when we discuss how the phase [vP], now as a post-transfer large string, might attach to TP via merger. This will be our main thesis.

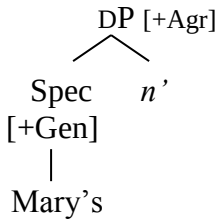
(42) **Case Assignment**

(a) NOMinative if SPECifier of phase is AGR-related with verb (vP),



=> [vP[+Agr] *I* like Mary]

(b) GENitive if Spec of phase is AGR-related with noun (DP),



=> [vP I like [DP[+Agr] *Mary's mom*]]

(c) Accusative [-Nom] if non-AGR-related (or otherwise by default) *(DP, VP),

DP [-Agr] => [*vP* She likes [VP[-Agr] [DP *me*]]]

Spec [-Nom] N => She saw [VP[-Agr] her [PP with [DP[-Agr] *me*]]]

Me

We'll eventually go on to claim that it is only the first two AGR-related structures which (i) provoke MOVE, and, as a result, (ii) which delay transfer of the phase to spell-out. Hence, AGR-related material saves the derivation from transfer (from certain death) by keeping the syntactic tree expanding upward, creating Spec-Head hosts along the way for more abstract/AGR-related material.

*[We'll notate DP, VP as making up the twin lexical categories void of MOVE, (hence, as a result, DP and VP sub-categorical properties would include [-Chain] since no binding/chain is established due to the absence of movement. Their twin counter-parts would include the functional categories DP and vP (respectively) and could be considered 'light' in this respect in maintaining a featural specificity of [+ Chain] due to their ability to MOVE].

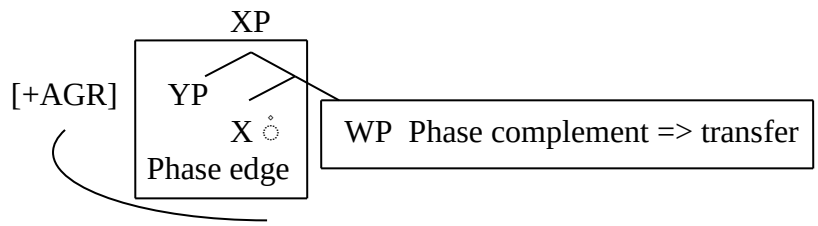
7. Merge over Move: Children's utterances are 'dead on arrival'

From the outset, let's extent the notion of what constitutes a phase on the premise of whether or not MOVEment is involved in saving a derivation from transfer at spell-out (say, to LF). Transfer to spell-out renders the derivation (now a frozen numeration) inaccessible to further operations—we therefore coin the term transfer as equating to 'Death' of the derivation. One way to speculate how this could be achieved is by stipulating that MOVE delays transfer of the derivation (i.e., keeps the derivation 'Alive') by providing functional escape hatches higher-up in the tree upon which elements can raise, thus evading death. Tom Roeper (pc. Oct. 2011) has addressed this issue by suggesting that MOVE delays transfer by extending the tree upward in order to allow for either (i) more abstract discourse-related material, or (ii) more functional AGReement-related morpho-syntactic material to enter into what otherwise would be a mere lexical/thematic derivation—both of which require a binding/chain of the moved constituency. Hence, MOVE (AGR or Discourse based) carries with it a [+Chain] feature. Specific to this paper, we'll refer to AGR as a featural and having a [+chain] feature. A second binary distinction could then be placed on whether or not the +chain is local vs. distant [+chain, [+ local / -local]], in addition to it being [-/+chain].

Chomsky formulates the Phase Impenetrability Condition (PIC) on the notion that once a phase has been completed (bottom-up) the phase seeks out early death at transfer (perhaps as the default) unless additional material projecting top-down provide a higher escape hatch for which the lower internal phase material can raise. In this sense, we view higher functional categories as escape-hatches in saving an otherwise dead derivation. This functional material may provide semantic discourse material, and scope as well as syntactic agreement relations corresponding with their lexical

counterpoints (of which we address below). If there is no other higher projection, transfer is forced to occur leading to interpretation of the derivation in question.
The escape hatch refers to the edge of a phase (the Specifier and Head of a phase). The Complement therefore necessarily is frozen in place and suffers transfer unless it can be attracted via some AGR feature, thus motivating the COMP to Move from out of it sbase-generate structure and into a higher functional projection, say a Spec-of-FC (where FC is a Functional Category). The COMP would be seen as moving into a second COMP position of FC, but rather a Spec of FC. The act of saving an item from transfer necessarily involves the promotion of COMP to Spec.

(43)



So, given (43) above, only the Spec (YP)-Head (X) is accessible to further computation with the COMP (WP) being frozen and delivered to transfer.
We believe this same dynamic is at work for all *lexical-to-functional* point-counterpoint relations in the following extent:

a) If AGR sits on top of lexical AdjP, then {+AGR {AdjP}} becomes Genitive,
b) If AGR sits on top of lexical VP, then {+AGR {VP}} becomes a [+Finite] Inflectional verb,
c) If AGR sits on top of lexical NP, then {+AGR {NP}} becomes Nominative.

(44) ***From Merge to Move-1 to Move-2:***

1. *Merge* [[N bottle] + [N wine]] → Two lexical items merge: *bottle, wine*
2. *Move-1* [[$_{DP}$/IP bottle$_i$ [I' of]… [bottle$_i$] [wine]]→ Genitive
3. *Move-2* [[$_{AdjP}$/IP *wine$_i$ bottle*] of wine$_i$]→ Adjectival (derived from Genitive)

8. Conclusion

This paper has attempted to show the *bricolage* 'structure-building' nature of child syntax. The *biological basis* of language should by default provide for such an incremental development as understood within the scope of any brain-to-language corollary, where full left-lateralization comes on line at roughly two to three years of age. The nature of a prosaic first-merge stage has two implications: first, the hypothesis that 'less is more' (Elman, Newport) may help the young child from being overwhelmed by the quantitative-qualitative amount of syntactic properties found in the ambient speech stream of the target language. The fact that children start off with simple 'merge-only' sequences accounts for the nature of the well-known lexical stage-one stage (e.g., Radford 1990). Second, a merge then move sequence nicely mimics what we find in biology—namely, where in binary modes of operation (e.g., Fibonacci code sequencing), the first operation is to merge two items (split, cut) and then to Move (copy forming recursion. In

short, the child starts off her syntactic processing mimicking that of perhaps the most robust biological operation known to man, an operation that has antecedents to the formation of spiral shell formations—the Fibonacci code of 1, 2, 3, 5 (see Appendix):

Finally, to a very large degree, children are conservative learners: they are *conservative* and extremely *sensitive to frequency* when they first engage in word learning (the lexical spurt). Their word mapping projects the level of conservativeness only found in **imitative** models of processing. Of course, while the child may esteem to map input to output in a strict linear mode, <Lxy→Lxy> (where L is language, and where {x,y} are features of L), one quickly gleans from the actual data that 'what goes in' doesn't always 'come out—namely Lxy → Lx (omission), Lxy→Lxyz (commission). Hence, when closely examined, non-target products are found in the outputs in the way of phonological and morphosyntactic deficits. Young children say things like *poon* for *spoon*, *two spoon* for *two spoons*, and *him eat poon* for *he eats with a spoon*. If such errors are not found in the input, they must be a product of what Chomsky calls 'an intervening processing'. But just how to describe and explain such incremental processes has been at the heart of child language development over the past half century. When children default to /Id/ past tense morphophonolgy (e.g., *hurted*), as opposed to a word scheme analogy of any verb ending with /t/ take a zero allomorph (hurt> hurt), then what must be said is that there is some rule which motivates a default setting. When children apply an {s} for plural to any nonce word irrespective of whether or not the word has been heard before within an analogy paradigm, then what must be said is that some rule is involved which not only sets the default, but that garnishes so movement application of the {s} decomposed of the stem. What this paper has attempted to show is that by tracing (i) a bricolage Merge-1 state, (ii) local/semantic Merge-2 state, to eventual (iii) a distant/syntactic Move state, we can track the child's syntactic production over time in ways which can best account for the protracted nature of child syntax—in general, showing a non-inflectional/Merge stage-1 and an Inflectional/Move stage-2.

One final implication here regards whether or not there might be a **specialized area** for language in the brain, otherwise known as a **brain-to-language corollary**. We believe such a **merge to move development** is in fact a direct result of maturational distinctions placed on precise cortical regions of the brain—with more semantic/Merge being supported by associative/lexical regions of the brain (Temporal Lobe) and with more syntactic/Move being triggered by Frontal Lobe (Broca's area) activity. Such movement even has been implicated in the planning of motor-control mouth movements for speech (see e.g., Grodzinsky and Amunts) up to levels of

processing which deal with more abstract morphosynactic properties of movement up/down the syntactic tree.

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9. Appendices: Early Child Language Data (Taken from Radford & Galasso 1998)

9.1 Inflectional Morphology

A theoretical view was previously held that two-and three-year-old children generally go through a stage during which they sporadically omit possessive *'s*, so alternating between saying (e.g.) *Daddy's car* and *Daddy car*. At roughly the same age, children also pass through a stage (referred to by Wexler 1994 as the **optional infinitives** stage) during which they sporadically omit the third person singular present tense +*s* inflection on verbs, so alternating between e.g. *Daddy wants one* and *Daddy want one*. One theoretical question has been whether children's sporadic omission of possessive *'s* is related to their sporadic omission of third person singular present tense *s*—and if so, how. In the wake of a Merge over Move theory, it seems the data are consistent with a local/MERGE stage-1 operation whereby lexical items first enter into a sisterhood relation absent any movement-based inflection—with a latter inflectional distant/MOVE stage-2 to follow. Consider the data below showing much more than mere optionality but rather a strict absence of inflection between ages 2;3-3,1:

(A1) Inflectional {s}: OCCURRENCE IN OBLIGATORY CONTEXTS

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%)

(A2) (a) That *Mommy* car (2;6). No *Daddy* plane (2;8).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*.

(A3) (a) Baby *have* bottle (2;8). No Daddy *have* Babar (2;9). The car *go*. (2;11).

(b) Yes, this *works*. This car *works*. It *hurts*. The leg *hurts*. (3;4).

(A4) (a) $[_{IP}$ Mummy $[_{I}$ +agr 's] driving]
(b) $[_{IP}$ [Mummy [$_{I}$ -agr ø] driving]

In much the same way, we might suggest that possessive structures like

Mummy's car contain an INFLecional Projection (IP) headed by an inflectional node fully specified for agreement with its possessor-specifier *Mummy*, whereas *s*-less possessives like *Mummy car* contain an IP projection with an inflectional head which is non-specified with respect to agreement:

(A5) (a) $[_{IP}$ Mummy $[_{I}$ +Agr 's] car]
(b) $[_{IP}$ Mummy $[_{I}$ -Agr ø] car]

We can consider English as having the following Case system as driven by INFLection:

(A6) An overt (pro)nominal is:
(a) nominative if in an agreement relation with a verbal INFL
(b) genitive if in an agreement relation with a nominal INFL
(c) objective otherwise (by default) (e.g., *'me'* subjects).

If we assume that two and three-year old children go through a stage during which functional heads are unspecified with respect to the features they encode, (due to their lack of functional IP projections such as INFL which generate Case and Agreement), we can provide a straightforward account of why two-and three-year olds progress form a flat sisterhood relation of *Me playing* to a more abstract MOVED projection between like *I'm playing*. At a latter second optionality stage what we can say is that feature specificity becomes underspecified leading to optional IP projections. The two types of clause would have the respective (partial) structures (A7a/b) below:

(A7) (a) $[_{IP}$ I $[_{I}$ +agr 'm] playing]
(b) $[_{IP}$ Me $[_{I}$ -agr ø] playing]

Since INFL is fully specified for agreement in (A7a), the overt auxiliary *'m* is used, and the subject is nominative by (A6a). But since INFL is unspecified with respect to agreement in (A7b), it remains null and has a default objective subject by (A6b).

If possessive nominals contain an IP headed by an INFL that may either be fully specified or underspecified for agreement, we would expect to find a similar alternation between nominal structures like (A8a) below with genitive possessors and those like (A8b) with objective possessors:

(A8) (a) $[_{IP}$ My $[_{I}$ +agr ø] dolly]
(b) $[_{IP}$ Me $[_{I}$ -agr ø] dolly]

In (A8a), INFL is fully specified for agreement with its possessor-specifier and so the possessor has genitive case by (A6b); but in (A8b), INFL is underspecified for agreement, and so its possessor-specifier has objective case by (A6c). In both structures, INFL is null because *'s* is used only where the specifier is third person.

9.2 Other Agreement Data:

(A9) Frequency of occurrence of first person singular possessors

AGE	OBJECTIVE ME	GENITIVE 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 produced by the child are given below:

(A10) (a) That *me* car. Have *me* shoe.Where *me* car? I want *me* car. (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.
(c) It is *my* TV. Where is *my* book? Where is *my* baseball? Don't touch *my bike*

(A11) Frequency of *I/me* subjects in copular sentences

AGE	NOMINATIVE I	OBJECTIVE ME
2;6-2;8	10/14 (71%)	4/14 (29%)
2;9	15/19 (79%)	4/19 (21%)
2;10-3;0	51/55 (93%)	4/55 (7%)
3;1-3;6	105/111 (95%)	4/111 (5%)

(A12) (a) $[_{IP}$ I $[_{I}$ +agr 'm] sick]
(b) $[_{IP}$ Me $[_{I}$ -agr ø] wet]

(A13) Frequency of second person possessors

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%)

(A14) (a) No *you* train. (=It's not your train). No it's *you* train, no (idem).
(b) That's *your* car. Close *your* eyes. No it's *you* house. Where's *your* friend? (3;4)

(A15) (a) $[_{IP}$ your $[_{I}$ +agr ø] car]
(b) $[_{IP}$ you $[_{I}$ -agr ø] car]

Third person singular subjects produced by the child at 3;6 are illustrated below:

(A16) (a) Him is alright. Him is my friend.
(b) Him is a big woof-woof. Him is hiding. What's him doing? Where's him going? Where's him?
(c) He's happy. He's bad. He is a bad boy. He's in there.
(d) He happy. He a elephant.

9.3 Word Order (taken from Galasso 2003)

(A17) Word Order at S(ingle) A(rgument) S(trings) Stage

Files 8-16	SAS	SV	VS	*DAS =SVO	/ other
Ages 2;4-2;8		n.=	87	78	290 / 5

It is only with the (high ratio) onset of [Subject + Verb + Object] Double Argument Strings (DAS) that we find consistent SVO word order.

Some Token Examples include:
(a) SV: Daddy cooking. Him go.
(b) OV: Dog kick (=I kick the dog). A egg cook. (=I cook an egg).
(c) VS: Open me (=I open). Work bike (=Bike works)

Token examples of mixed word order compounds:
The following compounds ae treated as Root Compounds (RC) as opposed to Synthetic Compounds (SC) in the sense that movement is not projected. Root compound *cup- coffee* is: (a) hyphenated [N] + [N] as a flat merge operation at the root level, then (i) leads to (i) Adjectival formation (e.g., *coffee cup*), then to (ii) Genitive formation (*cup of coffee*):

(A18) (a) cup-coffee (x3) (2;8)
i. coffee cup > ii. cup of coffee
(b) bottle-wine (2;8)
i. wine bottle > ii. bottle of wine
(c) box-toy (3;1)
i. toy box > ii. box of toys

The Merge over Move (MoM) analysis as advanced in this paper nicely maps onto the Synthetic vs. Root Compounding distinction with the former (SC) engaged in a movement operation (and where a higher functional projection sits on top of a lower lexical projection), and where the latter (RC) involves only the merging of two lexical items. Consider the examples below:

(A19) a). Pipe-smoker (= a person who smokes pipes)
a') smoker of pipes.
(**Transitive** formation—'smoker' takes the argument complement '*of pipes*').

(i) Root Compound (RC) (simple merge)

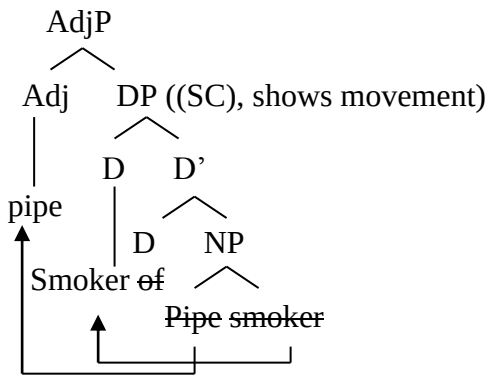
NP smoker-pipe // pipe-smoker
N N (flat sister relations—a product of merge: mixed word order)
smoker pipe
pipe smoker (= non synthetic RC)

(ii) Synthetic Compound (SC) Genitive structure showing syntactic movement)

DP ((SC), shows movement)
D D' (= Genitive)
D NP
Smoker of
pipe ~~smoker~~ (= RC)

e.g., *He is a smoker of pipes.*

(iii) AdjP (adjectival derived via genitive)



e.g., He is a pipe smoker (This is a 'wine bottle')

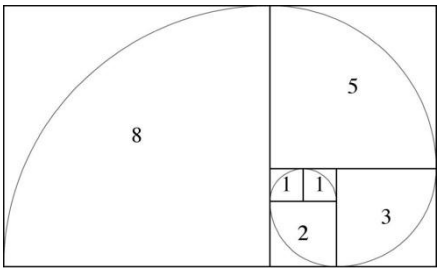
Note: In this sense, the more advanced structures *wine bottle*, *pipe smoker* as AdjP show movement from out of a genitive structures *bottle of wine, smoker of pipes*: In this account, adjectival phrases come out of a genitive formation and are therefore defined as a higher-order functional category, whereas simple merge sequences such as [*back*] [*bird*] (realized as an RC *blackbird*) are lexical projections, as has been advanced in the opening sections of the paper.

Merge [[N cup] + [N coffee]] → Two lexical items merge: *cup, coffee*
Move-1 [[$_{DP}$/IP cup$_i$ [I' of]… [~~cup~~$_i$] [coffee]]→ Genitive
Move-2 [[$_{AdjP}$/IP *coffee$_i$ cup*] of ~~coffee~~$_i$]→ Adjectival (derived from Genitive

9.4 The nature of syntactic trees

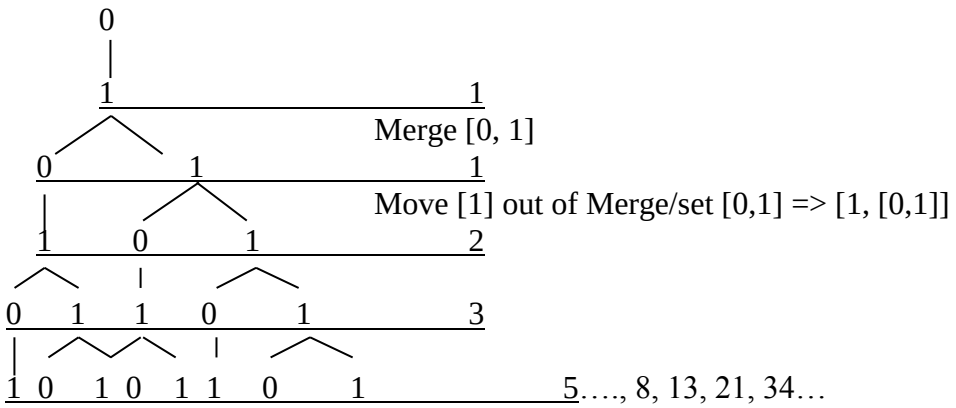
One of the leading tenets that have come out of current linguistic theory is the notion that the formation of syntactic trees is based upon an *architectural design* whose principles are ubiquitous throughout biology. The design provides for a universal architecture identical to what we find in the 'Fibonacci sequence'. Such an inherent order to delimit prescribed binary branching of syntactic structure to move in certain ways surely captures our collective imagination, whether or not one ascribes to universalism. The very idea that the way we humans string words together may have ancestral links to spiral formations found in shell fish is nothing short of stunning. Yet, the 'golden ratio' of Fibonacci holds: 1,1,2,3,5,8 etc.… for our language design. (Or, if you prefer to read the ratio as a binary rule, then [0 = 1], [1= 0, 1], etc., etc.:

(A 20)'Fibonacci Spiral Formation'



'Top-down' building: merge + move

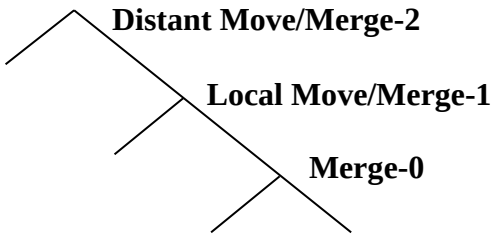
(A 21)



Note how 'linear closeness' works regarding processing of the fibonacci code: (merge last two adjacent digits (on left-side) in forming new digit (right-side).

'Bottom-up' building: merge + move

(A22)



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Protoword and True Word Production in Children of 9-36 Months: The case of a Kurdish Speaking Child

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Abstract

Protolanguage which is believed to begin after 9 months of age in children is quite different from prespeech in that it has both expression/ sounds and meaning and semantic content. This is followed by a transition stage into adult language called true word stage in which the child produces true words or adult like expressions with the same semantic meaning. The present study aimed at exploring the percentage of proto and true words in a Kurdish speaking child over a period of more than 2 years from 9 to 36 months in a longitudinal case study. To do so the data was collected through audiotaping child's production in naturalistic settings as well as observation and taking notes. This was done by one of the researchers in this study who happened to be the child's father. The results indicated that most of the protowords were produced during the first half of the child's second year, but he continued articulating protowords up to 29 months alongside using true words which were more frequent at this age.

These data suggest that both general and language-specific factors shape the early lexicon which was mainly related to the family members and the immediate needs of the child. Later on during the true word stage, more variation was observed in child's language production.

Keywords first Language acquisition, protowords, true words

1. Introduction

At the age of 9 - 12 months, children typically produce their first articulated word-like structures called proto-words or protolanguage (Kent & Bauer 1985; Vihman & Miller 1988; Vihman, 1996) which usually consist of one articulatory movement, such as the closure of the airway with the tongue, during phonation (Menn 1983). Some scholars have claimed that proto-words do not yet have a referential linguistic meaning. However, it has been found that even before the child embark on his/ her adult like language production, he / she may use proto-word as the only segmental phoneme construction he/ she can produce to express various needs and feelings (Dore 1975; McCune, 2008.).

Children's early language production, especially, early first true words and two word utterances during the first two years of child's life has been the subject of investigation over a long period of time (Walker, 2011 in Shishira et al, 2015). A true word which is part of the first fifty or so words articulated by the child is typically different from a proto-word in that it is phonetically and semantically relevant to the context in which it is produced and is consistent with the adult production (Owens, 1996). However, it should be born in mind that the age at which the child acquires his/her first true word

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may differ from child to child and is influenced by cultural and social factors as well as birth order, and child's temperament (Ritgero, 2014).

Generally speaking, child talk starts at about one year of age on average, though there may be cases where they begin talking earlier or much later but it averages out at about a year. According to different scholars, mainly, Halliday (1979) , there is a distinction between what the child produces before 9 months and what he/she produces after this period. Prespeech is the language produced before 9 months and is distinguished from protolanguage that is produced after 9 months or one year of age in that the former involves sounds and gestures without any semantic component while the latter involves both expressions and semantic content. It is the protolanguage phase from which child's later language will derive (Cattell, 2007).

Although research in the area of child language acquisition in general and word acquisition at various age groups is abundant, there is paucity of research in the acquisition of proto-words and true words in Kurdish speaking children in general and at the age range of 9-36 months in particular. Hence the current study was intended to obtain some data about the emergence of proto-words and true words in a Kurdish speaking child in a longitudinal case study.

Review of Related Literature

Most of the studies until a quarter of a century ago in the area of first language acquisition were mainly focusing exclusively on the acquisition of nouns (Ryan, 2014) and there is a consensus among different scholars and researchers in the field that most children start producing meaningful words at approximately between the age of eight months and two years old and these words are the building blocks of creating sentences (O'Grady, 2005).Two studies related to child language development in relation to linguistic development and the role of child's surroundings are Karousou, and López Ornat's (2013) and Gómez et al's (2013) which are elucidated on in what follows.

Karousou, and López Ornat (2013) investigated 12 prospect vocal behaviors reflecting children´s phonological, communicative and early symbolic development. They made an attempt to explore their development that is the onset, duration and extinction and their relation to early lexical development using a structured parental questionnaire on prespeech vocalizations along with a vocabulary questionnaire. Results indicated a global inverted U-shaped developmental pattern which emerged from the asynchronous development of the vocal behaviors examined, relating both their emergence and extinction to advances in linguistic development. A gradual transition into language was also observed.

Gómez et al (2013) examined the transition of a Spanish girl from the one and the two- word stages to the first complete sentence in a longitudinal study from 20 to 27 months. The results indicated that there was an increased use of constructions called pre-ellipses by the researchers because they mimicked adult ellipses. Moreover, pre-elliptical constructions which were at first locally dependent on their production context gradually became linked to the linguistic structure of the previous turn, leaving the

researchers to conclude that dialogue played a significant role in this transition.

More relevant to the present study is that typically developing children go through the vocabulary spurt stage in the second half of their second year of life, where their vocabulary increases suddenly and becomes more than before (Dandurand & Shultz, 2011; Nazzi, & Bertoncini, 2003). This is corresponding to the true word production stage,which follows the proto-word phase of child vocabulary development.

Locke (1983) refers to the first word-like structures articulated by children at the age of one as invented words which mark their entry into children's early lexicon and are considered as meaningful since they consistently refer to the same entity but may not have a recognizable adult model (Menn, 1978). Proto-word proceeds the first recognizable or adults like words or the so-called true words which are articulated at about 18 months (Cattell, 2007). Conklin (2010) categorizes protowords into three types namely the phonetically consistent form which has a standard sound pattern, but is not referentially stable, nor based on adult language, the pre-word which is phonetically consistent and referentially stable, yet not based on adult language, and finally, the sensorimotor morpheme that is phonetically and referentially stable, and it is based on adult language, but cannot be communicated without the use of a supporting gesture, and is sometimes part of routine.

According to Gentner (1982) children learn noun before verbs and other predicate forms due to deep conceptual differences that exist between the noun referents and the verb referents (see also De Boysson-Bardies, Hallé, Sagart, & Durand, C. 1989; Kim, McGregor, & Thompson, 2000; Gentner, 1978; Macnamara, 1972; Nelson, 1973).

One of the studies which is pertinent to the emergence of proto-words and true words in children is Reeny and Sreevedy's (in press) in which they examined the emergence of words in two languages, Hindi and Malayalam, in 10-12 months old children. The results of their study revealed that Hindi children experienced a higher percentage of both proto-word and true words and proto-words had a higher mean percentage in both languages. They concluded that this was an indication of the transition from babbling stage to the first fifty word stage that is true word stage.

In Shishira, Sushma, and Sreedevi's investigation (2015) of the frequency and percentage of articulation of proto-words, holophrastics and true words in two groups of children aged 12 to 24 months, proto-word productions were seen in all participants of the younger age group (12-18 months) and in only a limited number (7 out of 12) of the participants of the older age group.

The present study, then, was an attempt to investigate the production of proto-words and true words in a Kurdish speaking child as the paucity of research in this area demanded so.

2. Methodology

2.1. Participants

This study was a longitudinal case study in its design and compared the production/ emergence of proto-words and true words in children's speech.

The participant was a naturally developing Kurdish speaking child who happened to be the son of one of the researchers. The researcher started observing him when he was about 7 months and this continued up to the end of 36 months of age.

2.2. Procedure

To collect the required data one of the researchers observed the child (Pouya) on a daily basis and recorded his verbal productions along with his non-verbal behaviours and transcribed the recordings and notes into phonetic representations. The data are organized in tables including four columns titled as: Date- Pouya's production- English translation and Situation of production (see Appendix A).

2.3. Data analysis

Using CHILDES‟ CHAT (MacWhinney, 2000)the exact utterances of the participant were transcribed orthographically with the equivalent word provided within brackets when necessary for clarifying purposes. Two types of constructions coded for the purpose of this study were proto-words and true words categorized according to the participant's age range from 9-24 to 24-36 months. The percentage of occurrence of proto-words and true words was calculated by dividing sum of the occurrence of each word type by the total number of the words produced by the child multiplied by 100.

3. Findings

The present study was conducted with the purpose of finding out about the frequency and percentages of proto-words and true words in a Kurdish speaking child as the age progresses from 9 months to 36 months. All the proto-words and true words produced by the child are provided in Table 1 and Table 2 (for a full description of the words articulated by the child and the corresponding age at which they were produced see Appendix A).

Proto-words in this study were taken as those words produced by the child in different occasions to refer to the same or a different entity and were different from adult words considering their meaning or pronunciation. For example, "tete" was one of the proto-words produced by Pouya to refer to food, whereas an adult word for food is quite different from Pouya's production.

Table 1: Protoword and true words articulated by Pouya (9 to 24 months)

Protoword/ meaning	**True word/meaning**
Mœmœ =breast (produced when he was 13 months old) Lala=aunt (his mum's sister) Mamœ=uncle (his mum's brother) Daa=grandfather Tete=food	Babœ=daddy (produced when he was 10 months) Dai=mummy Mimi=aunt (his dad's sister) Kakœ=brother Bawa=grandfather Aw=water Akow= name of a boy Chu=went

Table 2: Protoword and true words articulated by Pouya (24 -36 months)

Protoword/ meaning	**True word/meaning**
Q=electricity	Amin= name of a girl
Han=bicycle	Jojo=insects
Jize=urine	Bœbœ=baby
Ma=cow/ox	Qexœ=shit
Kraw=hat/scarf	Ban=upstairs
Gu=flower	Hemam=bath
Peses=pistachio	Naw=in/into
Peteœ=cat	Bebe=come to
Makœ=toothbrush	Nœ=no
Qœkœ=light/electricity	Lala=sleep
End of 24 months	Dei=do
Bœq=electricity	Ainœ=mirror
Manakœ=ox/cow	Mala= the title for a clergyman
Kaws=shoes	Meimun=monkey
Jojo=sparrow/turkey	Kawshakan=shoes
Gost=meat	Masinœkœ=the car
Mœwzws=banana	Chest=food
Bœby=bye bye	Pesta=pistachio
Kœwa=shoe	Kolichœkœ=the cookie
Ghal=rubbish	Mœqœzi=facial tissue
Qowm=myself	Qetu=disconnected
Maksh=car	Poya= (his own name)
Xomœ=mine	Mashin= car
Palam=Parham (the name of his brother)	**Last true word produced at about 29 months**
Last proto-word produced at about 30	

Pouya started producing the proto-words at the age of 13 months and he articulated 28 proto-words up to the age of 30 months and 31 true words up to the age of 29 months while the rest of his utterances were mainly holophrastic or complete adult like utterances. This result is different from the claim made by researchers such as Kent & Bauer 1985; Vihman & Miller 1988; Vihman, 1996 that argued the start point for production of protowords is 9-12 months.

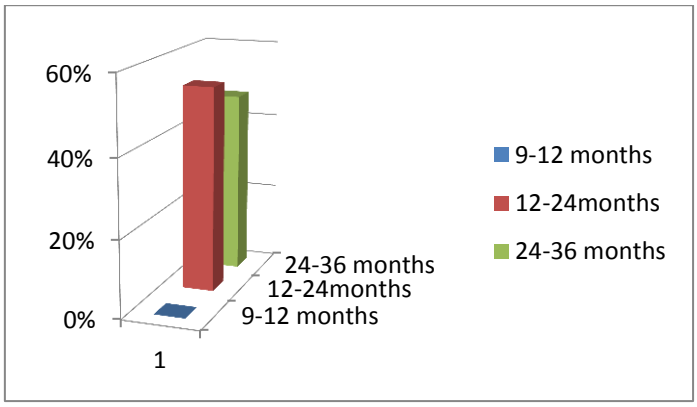

Figure 1: Percentage of Pouya's proto-words at different age ranges

As Figure 1 illustrates 15 out of 28 that is about 53% of the proto-words in the present study were produced during Pouya's second year of life that is from the end of 12 to 24 months. As Table 2 above depicts the last proto-word produced by Pouya was when he was about 30 months old meaning that this finding is in line with one of the findings of Shishira, et al' study (2015) in which proto-words were seen in some of the older group of children as well. Interestingly the protowords produced by Pouya were 1 or 2 syllable words which was in consonance with the findings put forth by Menn (1983), Laakso et al (2010) , and Shishira et al' study (2015) who also reported proto-words to comprise of just 1-2 syllables with limited articulatory movements performed by their participants. These words, however, closely approximated speech like productions and had a concrete linguistic communicative meaning to the child and were used to refer to something or somebody.

The findings of this study revealed that the production of proto-words continued up to the age of 30 months with 53 % in the second year of life and 47 % in the third year of child' s life. This finding is different from that of Reeny's (2014) which indicated a greater frequency of proto-words of 1-2 syllable strings in children nearing the age of 1 year. The majority of the proto-words produced here could be categorized under the two classifications identified by Conklin (2010). In the first category, there existed words that were phonetically consistent and based on standard patterns but not yet like adult production. These types of words are claimed to have various referential basis in different occasions. For example, the word [jojo] was used in different occasion by Pouya to refer to either insects, sparrows or turkeys thought it was phonetically stable. In the second group of Conklin's word there were those words which were phonetically and referentially stable but were not adult based yet. In fact, the majority of the words articulated by Pouya could be placed in this category. Some reduplicated babbling strings of words such lala= sleep and tata= food were also produced at this stage.

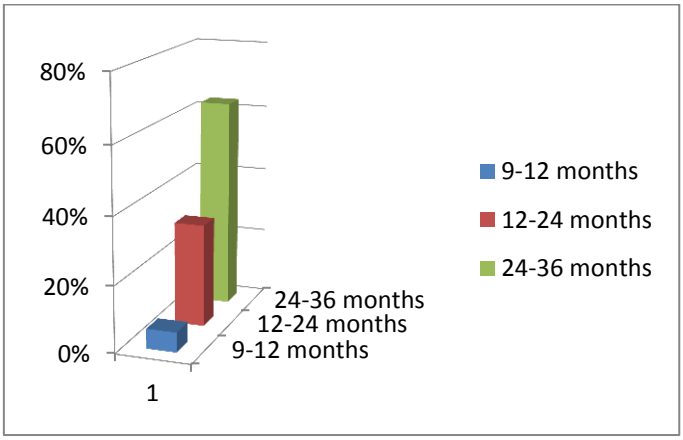

Figure 2: Percentages of Pouya's true words at different age ranges

In the present study, a true word was considered as a word which is phonetically and meaningfully relevant to the context and is a consistent match to the adult production.

Pouya produced his first true word at the age of 10 months (the word Babœ=daddy) with 6% from 9-12 months followed by his 31 % of true word production up to age 24 months. This was much earlier than what Cattell's (2007) argued for that is true words are articulated at about 18 months. It should be born in mind that this could be due to individual as well as cultural and social factors (Ritgero, 2014). This is, however, in line with Reeny and Sreevedy's (in press) conclusion that this is a sign of transition from the babbling stage to the true word stage. Another 31 % of true words were articulated in just a month that is from 24 to about 25 months and the rest were produced from 25 months to approximately when the child had 29 months of age along (32%, total of 63% at 24-36 months) with holophrastic and adult like questions and answers. Some examples of the true words produced by Pouya were words such as [Babœ=daddy, Dai=mummy, Mimi=aunt, Ban=upstairs, Hemam=bath, lala= sleep].It is interesting to note that true word produced by the child in this study clustered around his family members, his basic needs and the immediate matters around him and this was consistent with the findings of Shishira, et al' study (2015). These were mainly inclined toward nouns in grammatical categorization and few examples of complex grammatical structures such as verbs or plurals were also observed. These included [chu= went, bebe= come to, and Kawshakan=shoes]. In shishira et al's study no example of plurals was found. The true words produced were mainly bisyllabic along with some mono or multisyllabic words such as [aw= water, nœ= no, Kolichœkœ = the cookie, and Kawshakan=shoes].

4. Conclusions

This study was an attempt to examine the emergence of the proto-words and true words and their frequency and percentage of occurrence in a Kurdish speaking Iranian child during his early linguistic production ranging from 9 to 36 months. The results revealed that both proto-words and true words emerged during this stage, with the true word production proceeding the protowords as opposed to what was stated by Menn (1978).The production of proto-words and true words continued up to almost 30 months and was accompanied by holophrastic words, two -word or multi -word production of utterances which was not the subject of the present study and requires a different plan of investigation by itself. In contrast to the results of other studies (see, for example, Shishira, Sushma, and Sreedevi, 2015), proto-words were copiously observed in the later rather than early stages (53% after 24 months and 47 % in early stages up to 24 months). Production of true words which began at 10 months of age continued up to 30 months with a percentage occurrence of 31% in just a month from 24 to 25 months, which seemed to be the age range for the vocabulary spurt for this particular child and in line with some related studies (see Dandurand & Shultz, 2011; Nazzi, & Bertoncini, 2003).

Further studies are required to investigate the structure of the adult like utterances in terms of syllables, the situation in which they were produced, and what they meant. The language produced by children of different age groups can also be compared and contrasted in terms of the emergence of

proto-words, holophrastics which replace a whole utterance and the true words. The application of some word making strategies such as conversion and generalization is another topic that warrants some sort of investigation on the part of the researchers.

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Appendices

Appendix A: Utterances Produced by Pouya up to 36 months of age

(The whole data includes over 1000 samples as presented in the following charts.

Date	Pouya's Production	Adult Pronunciation	English Equivalence	Situation
Up to 7 months	bexxx	_	_	Most of the time
8&9 Months	Ada	Æla	God	When he is going to bed or other times
10,11&12 M	æw Tiee	æwæ chiyæ?	What is that?	Pointing to every object in the environment
	babæ	=	Daddy	Coming toward me
	Dai	=	Mummy	Coming toward his mother
13-16 M Pouya repeats all these words (many times) while going to bed/lying in his bed	mæmæ	mæmkæ	Breast	When he wants milk
	lale	xalæ	Aunt	Pointing/seeing his aunt (sister of his mother)
	mamæ	mamo	Uncle	My brother
	mimi	mimi	Aunt	My sister
	kakæ	kakæ	Brother	Pointing/talking to his brother Parham
	daa	Da ´a	Grandmother	While seeing his grandmother
	bawa	=	grandfather	While seeing his grandfather
	aw	=	Water	While wanting water or seeing water
	tete	chesht	Food	While wanting/seeing food
	Akow	=	Name of a Boy	While calling/seeing/ or wanting to go to his friend named Akow
17-20 17.1	Awæ chiyæ?	=	What is that?	Pouya replaced tiee with chiyæ which is the adult pronunciation of the word.
17.2	Babæ æwæ chiyæ?	=	Father what is that?	The question is more complete
17.3	æwte	awækæ	The other one	Asking for a specific thing among others
18.1	Babæ chu	=	(my)Father went	
18.2 19.1	Bawa chu	=	Grandfather went	
	chu	=	went	The verb

				/chu/=went wsa used to point to the person who left
24.1 24.2	Amin	=	Name for girls	Our neighbors daughter's name was Amin, Pouya called her name upon seeing her or hearing her voice.
24.3	q	bærq	Electricity	Pointing to lamps or other electric devices
24.4	jojo	=	insects	Pouya generalizes it to all small things and beings
	bawa/ da'a chu	=	Grandfather /grandmother went	Pouya repeats these utterances while he is alone and nobody is coming or going
24.5 24.6 24.7 24.8 24.9 24.10 24.11 24.12 24.13 24.14 24.15 24.16 24.17 24.18 24.19 24.20 24.21 24.22 24.24 24.24	Hæn Hæn Hæn (v) Bæbæ Jize Qexæ Ban Ma Kraw Gu Pes pes Peteæ Bevæ Hemam hemam Naw naw Be be Bghoin Næ næ Awækæ qei Niæ Lala Dan Dan	0 0 = Gemez = = Mana/ga Klaw/rosary Gol Pestæ Peshæ = = = = Broin = Aw bekæ qæi = =	0 0 Baby Urine Shit Up/upstairs Cow/ox Hat/scarf Flower Pistachio Cat Utterance for warning babies of hot things Bath In/into Come2 Let's go No no Pour water on it There is not Sleep/go to bed Put it down/ sit	Pouya uses it for 'bicycle' For riding of bicycle Upon seeing babies in films His grandparents live upstairs Pouya says "ban' when he wants to be there. Upon seeing a cow/ox or horse and the like. When Pouya wants his mother to take him out of home he says 'kraw kraw' meaning be ready to go out. Pouya generalizes the word 'bevæ' and uses it for hot things and other painful materials and situations. When he want to be

24.25 24.26 24.27 24.28	Lawæ Makæ	= Daine/Danish = meswak	down Don't do that Toothbrush	bathed Put it into sth (Pouya uses a preposition/noun as an imperative verb). Come or bring sth He says no when he is not willing to do sth or others do it. When he wants sth to be washed When he is asked 'where is it?' he replies: Niæ. When he wants to go to bed takes his pillow and says 'lala'. If one wants to keep Pouya in a place and he will not be willing says 'lawæ'
24.29 24.30	Ha babæ Kakæ be	Ha babæ + V = 	Here father (take sth) Brother come	Pouya wanted me to take his dress and dress him)
24.31 24.32 24.33 24.34	Chechæ tæwaw Hawækæ Ha kakæ Qækæ (several times)	Chesht tæwaw (bu) Hawæsæ Ha kakæ + V Bærqækæ + V	Food/meal finish It is that Here brother (take it brother) Light/electricity	 Pouya's utterance when he wanted us to take him near the switch to turn on/off the lamp
24.35 24.36	Lato beibi	Lacho Not used	Go away/do not do that baby	 Pouya had heard the word from Tv and he repeated it
25.1 25.2	Awækæ be Babæ awækæ qei bæbækæ	Awækæ/Ns beræ Babæ menalækæ walæ nawi awækæda	Bring the water Father water on baby	He woke up at night and he was hungry he wanted to drink milk/water/tea (some liquid in a glass). Pouya saw a baby on TV who was in water and said…

25.3 25.4	Nawækæ2 Babæ/dadæ ch(t) ekpa	Peshækæyan +v+N 0	In in 0	Some people were putting a cat in a basket on tv watching that Pouya said: .. Pouya uttered this word many times it had no meaning.
25.5	ælæwækei babæ	Gushyakei babæ	Father's phone	When referring to my phone Pouya says = the phone of, but referring to others phones he says ælæwækæ= the phone
25.6	Babæ dei 2	Babæ hæmter=father again	Father do(again/go on)	Pouya had a toy-microphone he had taken one end while I had taken the other end and pulling it when I left it Pouya said… he wanted me to repeat the game.
25.7	ainæ	=	mirror	He uttered the word while he had hold a small mirror in his hand
25.8	bæq	bærq	Electricity	He called electricity 'q' earlier but now he calls it bærq which is closer to the adult form without "r"
25.9	Haberi dai	Dai beri	Bring it mother	Pointing to the a cup of tea while gesturing of drinking by his mouth
25.10	Jojowækæ nawi	Mish walæ nawi qotwækæda	There is a fly in the box	There was a fly in a box but Pouya's utterance is not similar to adult production
25.11	mæla	= but with dark 'ɫ"	Title (for cleargymen)	
25.12 25.13	Daa næna Chiwgæ?	= ræna =	Daa=grand mother What has happened/what is the matter?	 **The appearance of interrogative sentences

25.14	Daakæ nanækæ	Daam nani da pim	The grandmother the bread	Pouya's grandmother had given him some bread
25.15	Manakæ	Qater/ga/mana	Mule/ox/cow	Pouya uses generalization and calls those animals

				and other similar ones 'mana=cow'.
25.16	Jojo	Boq(boqlæ)/cholææk	Sparrow/Turkey	Adults use 'jojo" for insects and birds when talking to children. Pouya has generalized it.
		=		I asked Pouya did you do that? He replied..
25.17	Men næwem	Nan bere	It was not me	Difference in pronunciation 'I' for 'e'.
25.18	Nan beri	=	Bread/food bring	
25.19	Biwæ	=	Take it	
25.20	Lawæ mæyæ	=	No don't come	Pouya's mother wanted to lift Pouya from his place and seat him in another place.
25.21	daxæ		It is hot	Pouya used 'bevæ' = danger/warning earlier but now he uses 'daxæ' which is more specific and is a combination of verb+ pronoun.
25.22	Chechækæ awækæ qæi	Zaratækæ bexæ nawi awækæ	Food water into	I had cooked corn for Pouya had wanted me to put it in salty water.
25.23	Habæ gowez	=	Give walnut	
25.24	Dai lem	=	He hit me	He told me that his brother had hit him.
25.25	mas	Masem gærækæ	Yoghurt	He wanted yoghurt but used one word instead of a sentence.
25.26	De de de	Dei dei dei	Agin again again	He wanted me to continue playing with him
25.26.1	Gorg hat	=	Came wolf	He wanted to scare his grandpa.
25.27	meimun	meimun	monkey	He heard the word from TV and repeated it later on.
25.28	Gel æka	=	It aches	Pouya was sensitive to different things and red spots appeared on his body he said …
25.29	Hawæ glæyækæ	=	There is one	Pouya saw a fly and said:…
25.30	Lacho la dæt ækæm	Lacho becho æwla dætækæm	Away I hit you!	He wanted his brother to leave Pouya's seat.
25.31	Hato hato xola	=	He returned 2 Go a little away	A boy was riding a bike in our alley when he returned toward us Pouya said: ….
25.32		Xot ladæ		When we were around

				the table he told me…
25.33 25.34 25.36	Menæ Bawa ruyæ mal lebasoi	Ini menæ = lebasshoi	That is mine Grandpa went home washing machine	He saw a biscuit and said…
25.37 25.38 25.39 25.40	Babæ hato Kæwshækæm2 Kæwshækan Nækei2	= = = =	Father returned My shoes Shoes Don't do that	I was away for one day when I returned home he was asleep when he awoke he said:… He was in the yard and wanted his shoes. Pouya wanted to jump down from a canapé and his mother wanted to prevent him.
25.41 25.42	Chiyækei? masinækæ	= Wæ = ruwinæ dær	What are you doing? The car	I was setting the TV he asked me… I asked Pouya where they were. His mother's uncle had picked him up in his car…
25.43	Dai lala ækæn	Dai æwan æxæfen	Mammy sleep they do	Pouya had put several dolls on the table and told his mother..
25.44 25.45 25.46 25.47 25.48	Babæ dochæxækei sei kæ Balan be Babæ æwæ daxæ Bæbækæ hato bæbækæ chu Chechækæ bere	Babæ dochærxækei seir kæ Baran beware = =(korækæ/ kænishkækæ/ menalækæ hato/chu) Cheshtækæ bere	Father bike see Rain come Father that is hot The baby came the baby went The food bring	Pouya's bike was broken down he told me…. It rained then stopped Pouya said.. Pouya looking at a great fire set by children uttered this sentence. The TV was showing a doll appearing and hiding, watching that Pouya said…
26.1 26.2 26.3	Bazikæ Babæ men naxom Niyæ næma	= = =	Open it Father I don't eat There is n't(here)/it disappeared	I wanted to give him some dates I asked Pouya: 'where is the book?" he replied..

26.4 26.5	Pekæ gel æka Dasæ (for daxæ	Pe(k)m gel æka Sardæ/chigæ	The foot is aching It is hot (cold)	 Pouya used to call unpleasant thing 'daxæ=it is hot' Now he uses 'dasæ:sardæ' for cold things
26.6 26.7 26.8	Dukanækæ bæstænyækæ beræ Bixæ Chesht/gost/pestæ/mæws	Le Dukanækæ bæstæny beræ = =/gosht/=/mæwz	The store the ice-cream bring. Throw it Food/meat/pistachio/banana	No preposition (from) Pouya wanted me to throw the ball to him
26.9 26.10 26.11 26.12	Næ næ naxonækæ næ Nawæse Maxo/næxo bæby	Næ naxon nagerem = = Bai bai	No no I do not cut nails. It doesn't close Don't eat Bye bye	I told Pouya : let me cut your nails. He replied… I told him : close the door He uses two forms of negative prefixes He used it along with shaking his hands. He had learnt it from TV.
26.13 26.14 26.15 26.16	Babæ hæs Daikæ ban æwæ bæbækæ kolichækæ	Babæ hæls Daikæ bixæ ban æwæ ini æw menalæsæ =	Father wake up/get up Mother up/over That baby The candy	In the morning I was lying in my bed Pouya told me… His mother wanted to put blankets over other persons pouya said… Pouya had a toy in his hand and his mother asked him what is that he replied… and he meant it belongs to the baby in the yard.
26.17	Baranækæ hat mæcho	Baran bari/æware	The rain came	Adults' form means: it

26.18		=	Don't go	rained/rains
26.19 26.20 26.21 26.22 26.23	Daikæ xoshæ masækæ Ei men2 Qei naka Kakæ bewælere Lolæ2	Daikæ masækæ xoshæ =1 = Kakæ bewærewæ Hini lolækæs	Mummy delicious is the yoghurt So what about me? Never mind/no problem Brother come on Tap2	In adult form the noun precedes the adjective Pouya wanted sth. Pouya's finger was hurt by the door, his brother wanted to calm him down Pouya said We wanted to visit one of our relatives Pouya told his brother. Pouya had a tap handle in his hand. I asked him "what is that?"
26.24 26.25 26.27 26.28 26.29	Mashinækæ kæwt Peikan mezgan Bailækæ bere Gowish beshkenæ Na naxom	Mashinækæ tasadefi kerd Peikan mezgæwt Mobailækæt bere Gowiz beshkenæ Næ =	The car fell N of a car/ mosque The mobile bring Break the walnut No I don't eat	A car hit the st. curb Pouya said… Pouya rhymed two names which he uttered the second one correctly in isolation. No possessive pronoun He wanted his breakfast
22.7.85 26.30 26.31 26.32 26.33 26.34 26.35	Babæ seir kæ mokæ chi æka æwæ ini mamo zafæræ kæws nayæm kæwt Ha bezanem chonæ	Babæ seirkæ xersækæ/horchæ kæ chi æka = Kæwsh = = =	Father see/look what the N(bear) does. It belongs to uncle Zafar Shoe I don't come He fell	The TV was showing a film about bears Pouya told me… Pouya calls animals such as cows 't mokæ' His uncle's bead was left in our home Pouya said… S sound for sh.

26.36			Give (it to me) to see how it is.	I asked Pouya: do you come in? I had taken a picture of Pouya and his brother Pouya wanted to see it
26.37 26.38	Kar naka/kar æka Daikæ qeichiyækæ beri xasika	= = roigæ= = =	It doesn't function/functions Mummy scissors bring to fit it	I was mending a tap Pouya asked
26.39	Habe dærækæ bazikæ	Habe dærækæ bazkæ	Come open the door	
26.40 26.41	ælæw mehran choni? Lobya æxom	= =	Allow Mehran how are you? I (want to) eat beans	He talked to one of our relatives' child
26.42	Hawæ pesækæs	Hawæ peshækæs	There/that is the cat	** similar to 'fis' case.
26.43 26.44 26.45 26.46 26.46.1	Hawæ dai lem Hawæsæ Haban Lalo pestæ Golækæ Hasæ bikælo	= = = Lalo pestei bo sændem Gwrwakæ/joraw ækæ Hælsæ bikæro	That (th./person) hit me . It is that It is up(upstairs) Uncle pistachio The socks Stand up/get up Open it	Pouya's foot was hurt by the wall. I asked him what shall I do (while doing physical exercise)? He did some exercise and wanted me to imitate him. He meant 'my uncle bought pistachio for me'

26.47	æwæ chiw?	=	What happened?	We heard a loud noise from outside
26.48	Nachem	=	I don't go	Pouya said…
26.49	Naxom	=	I don't eat	I asked Pouya: do you go?
26.50	Bechin lai Amin	Bechin bo lai Amin	Let's go Amin(name)	In reply to: do you eat (sth.)?
	Mamæ taq æka			No preposition 'to' in go to
26.51		Mamo tæqæ tæq æka	Uncle is making noise	
	Zokæ2			
26.52	Mæqæzi	=	Hurry up(lets go)	There was the noise of breaking/opening walnuts or sth. like that from another room
26.53	Be becho	Dæsmal qagæzi	Facial tissue	
		=		
26.54	Baxælækæ		go	
		N+ bixæ baxælem		
26.55			the pocket	
	Men xamoji ækæm	Men xamoshi ækæm		
26.56	bichnæ		I(myself) turn it off	
		=		
26.57			Set it	
				**Word mixing He wanted to say: put the facial tissue in his pocket.
				He wanted me to set the chess pieces.
26.58	Kæwsækanen	Kæwshækanem	**My shoes**	=take off my shoes
26.59	Ha babæ hawæ bo kæ	=	Come father smell it/that	
26.60	Hawæ lawæ	=	Put it away	
26.61	Alæ	=	It is ok/ beautiful	
26.62	Tæw xom	Ketaw æxoinem	Book read	He put a slice of carpet under the blade of the door and said…
26.63	kæwsækanet	kæwshækanet	**Your shoes**	Incomplete forms of the noun and the verb (he was turning the dictionary pages)

				He meant: put on your shoes and let's go
26.65 26.67	*Naxo 2 Næma	Naikæmæbær Niyæ/tæwaw bo/chu/gem bu	I don't eat for: I don't wear there isn't/finished/went and disappeared	His mother wanted to dress him. Meaning extension
26.68 26.69 26.70 26.71	Beqækæ woshen kæm? Beqækæm woshen ker Tæwaw bæsæ Qæn babæ qæn	Berqækæ roshen kæm? Berqækæm rowshen kerd = Babæ qænem bedære	May I turn on the light? I turned on the light. Finished, it is enough Sugar father sugar	=father give me sugar
26.72	Babæ daikæ chu hilkæ bere	=	Father (my) mother went to bring eggs	
7.8.85 26.73 26.74	Du dane I xome	= Ini xome	Two pieces That is mine	He had two bills in his hands and said…
26.75 26.76 26.77 26.78 26.79 26.80	Babæ chu bo Talan Kakæ beto fæk bere Balanækæ golæ Daa næna chesht æka Bawa alæ Qajokæ ber tow	= taran = Baranækæ golæ Daa ræna chesht æka = Tow qachoxækæ bere	Father went to Tehran My brother will return home (and) brings snack. The rain is bad Grand ma,Rana,is making/makes food Grand pa is good the spoon bring you	** Appearance of the preposition 'bo=to' In response to "where did father go?"
26.81 26.82 26.83	Babæ chu Talan Asel Beqækæ mæqosh kæm?	Babæ chu bo Taran Yaser Berqækæ xamosh kæm?	Father went Tehran Name(his uncle) May I turn off the light?	In his former production he produced the required preposition – bo=to, but now he didn't produced it. **(regression)**
26.84 26.85 26.86 26.87	Hæsæ banækæ Masa ækæm Du danæ Helkæ bixæ qei gazækæ	Hælsæ bechinæ banækæ Tæmasha ækæm Hær duyan bedæ Helkækæ bene bani gazækæ	(Stand up)come the roof I am watchin/looking	Let's go to the roof. It was raining his mother told him come in Pouya

			Both/two Put the egg on the stove	said… There were two biscuits in my hand Pouya wanted me to give him both of them
26.88 26.89 26.90 26.91 26.92	Baby qasi kæ Bele Kesh kesh mamle kole hilkæ be bo mæyæ Ghal Maman salam	Baby xas kæ = Kesh kesh mamre kolæ hilkæ bekæ bo+ N (here Semæyæ) Ashghal Dai slam	Set/fix baby Let me(do sth.) A folk verse Trash Mummy hi	He wanted me to set the satellite dish to show the baby channel that its signal had scrambled Pouya went toward the roof and said… Pouya heard the sound of the trash car and said… Pouya calls his mother 'dai' which is the Kurdish word for 'mother'.He had heard that the child of our neighbor called his own mother 'maman' which is the Persian word for mother. Pouya imitated him…
26.93 26.94 26.95 26.96 26.97 26.98	Dærækei bæst Nail Lewan sekya Qasi kæm? Beshelem? dætækæm	= Nayæli Lewan shekya Xasi kæm? Bishelem? =	He closed the door You don't let me (do sth.) The glass/cup broke. May/Do I fix it? Do I massage it? I hit you	 He wanted to massage my leg. Warning with his hads…
26.99	Mas æxom	=	I eat/want yoghurt	

27.1	bæsæ	=	It is enough	I was pouring drink in his glass he said…
27.2 27.3 27.4	Selam babæ Bilezhm? Bazikæm?	= Birezhm? =	Hi dæd May (do) I pour it? May(do) I open it?	 He had a glass with some water in his hand Pointing to a basket lid he said
27.2 27.3 27.4	Selam babæ Bilezhm? Bazikæm?	= Birezhm? =	Hi dæd May (do) I pour it? May(do) I open it?	 He had a glass with some water in his hand Pointing to a basket lid he said
27.5 27.6 27.7 27.8	Topækæ dai ley æmæ chiyæ? mamæ lolækei shekand ælow babæ choni?	= = (N)+lo… =	The ball hit him What is this? Uncle broke the pipe Allow father how are you?	A ball hit a player Pouya said When the gas company worker handled the gas pipes he said…
27.9 27.10 27.11	Jegækæ daxæ Kakæ kelilækæ bedi Naxom, aw æxom	= Kakæ kelilækei berd =	Set the bed Brother took the key I don't drink(milk),I drink water	 Pouya, Do you drink milk?
27.12 27.13 27.14	Næxo Fuykæ Næ dædækæm	= = dædnakæm	Don't eat.. Blow it No hit you	* negative maker at the beginning of the verb while adults use it as a suffix.
27.15 27.16 27.17 27.18	Cheshtæ xas kæ Du danæ Tershæ Chiyæ æwæ?shiræ?	Cheshtæ xaskæ = = =	Make the food Two It tastes sour What is that? Is it milk?	Pouya told his mother.. His mother gave him one walnut Pouya said…= one more *concept of taste
27.19 27.20 27.21	Qowm2 Kæmæ Xom bæstem	Xowm1 = =	Myself It is not enough. I myself closed it	 X and q sounds occur in variation. Pouya, is it

27.22	*Næ sardæ	Sard niyæ	Not cold	cold outside?
27.23 27.24 27.25 27.26	ælow selam, xasi/bashi/ choni? Mæqoshi kæ Mæykænæ Babæ bæsæ	= Xamoshi kæ = =	Hi,how are you? Are you ok? Turn it off Don't take it off Father it is enough	I was pouring oil in a glass he said…
27.27 27.28 27.29	Dæs æxonem *Babæ læ taran hato daine	Dærs æxoinem = =	I am studying/reading Father returned from Tehran Put it down	He was handling his brother's books; I asked him what are you doing?
27.30 27.31 27.32	Asel læ pelækan kæwt æwæ shekandem æchem Asel	Yaser = æwmæ shekand æchem bo lai Yaser	Yaser fell the steps I **broke** it I go Yaser	He flatted a ball* overgeneralization *preposition omission
27.33 27.34 27.35 27.36	æchem parkækæ semæyæ semæyæ topækæ bexæ daikæ bxæ ban beibi	Achem bo parkækæ = = Daikæ bixæ beiby	I go the Park Name of his aunt Semæyæ throw the ball Mother change it (channel) to baby (channel)	*prep. Omission Formerly he called her 'mæyæ'
27.37 27.38	Daikækæm xoafez æwæ chio? Kæwt?	=xoahafez = =	My mother goodbye What happened? Fell?	Pouya saw a player who fell, he said…
27.38 27.39 27.40 27.41	Dai lem Nei rezhi Xom topækæm tæqanem æwæ xomum	= = = =	He hit me Don't spill it I myself flatted my ball That was I myself (who did it)	
27.42 27.43 27.44	Sidiyækæ xæ ban Dai xom kolichæ æxom ærom daikækæm machi ækæm	= bexæ ban = = daikem mach =	Turn on the CD set Mummy I myself eat the candy I go to kiss my mother	
27.45 27.46	Mæyæzhi Xalo Rezgar sidiyækæ qasi kerd	= =sidiyækei xas=	Don't say it Uncle Rezgar mended/fixed	When he doesn't a word or expression..

27.47 27.48 27.49	Cheyigæ Sut Daikæ æwæ chi xasi ækei?	= = Daikæ æwæ chiyæ xasi ækei?	the CD set It is cold It burnt Mummy what is that (food) you are making?	He sat on a cold ceramic surface..
27.50 27.51 27.52 27.53 27.54	Becho mædræsæ Fæk æsenem Daikækæm shæwalækæ mei kænæ xojane æchem bo mædræsæ	= bo= = Dai shæwalækæ mækænæ xojwanæ =	Go school I buy snack(pofak) My mother don't take off (my) the trousers it is beautiful I go to school	To his brother
27.55 27.56 27.57	Dærs æxwenem Daikækæm mach ækæm Kori babægiyan	= Daikem mach ækæm =	I am studying I kiss mummy Son of my dear father	What are you doing?.. Whose son are you?
27.58 27.59 27.60 27.61	Geshtem xoshgærækæ Pouya æchem zæmawæn xoa hafis	= (geshtanem) = æchem bo zæmawæn xoa hafiz	I like/love all His own name I go wedding Goodbye	In response to what is your name?
27.62 27.63 27.64	Mamozhen Helkækæ tæwaw bu Fæk beri	= = Fæk bere	The wife of my uncle The egg finished Bring snack	
27.65 27.66 27.67 27.68	Xom shekandem Beqækæ maqosh ækæm Daikægeyan jegækæ daxæ Kakæ be hawæsæ	= Berqækæ xamosh ækæm = =	I, myself, broke it. I turn off the light Dear mummy lay the bed Brother come, it is here	He wanted to give Parham his pen
27.69 27.70 27.71 27.72 27.73	Qei æmæ? Babægeyan hato? Kamæ æwæ cheshtæ?goshtæ?gosht xoshæ. Xestem banækæ æwæ lawæ dærs æxoinem	= = = Xestemæ banækæ =	On this? My dear daddy returned? Do you let me see that food? Is it meat? Meat is delicious . I threw it to the roof	He used interrogative intonation.

			Put it away I am studying	
27.74 27.75 27.76	Mækæ gazækæ dæt æka Maksh Bashæ2 dei lacho	= = xætæræ Mashin =	Don't do that the gas will hit you Car Ok2 clear the way	'Hit' instead of: 'dangerous'
28.1 28.2	Qeichiækæ kowa? æchem beibi xas ækæm	= =	Where is the scissors? I go to set the baby channel	 We were going to set the satellite dish
28.3 28.4 28.5	æwæ daikæw ækæwm daænishem. babæ giyan æche bo bashga	= = =	It was mummy I will fall. I sit down. Dear daddy is going to the club	I asked him why his trousers were torn. He replied …
28.6 28.7 28.8 28.9	Næ ampolækæ gænæ Hawæ shekandem æwe Babægiyan dai lem Babæ giyan kishi	= Hawmæ læwe shekand = =	No the ampoule is bad That I broke there Dear daddy hit/hurt me Dear daddy you are on check	Pouya was eating candy while coughing, his mother told him to eat less candy otherwise he should use ampoules. Pointing to my pen which he had broken it the day before. I told Pouya:'don't eat candy while coughing" He told his mother… I was typing I heard Pouya's utterance. When I looked at him he had a chess board in front of him with some pieces… (he had seen his

				brother and I playing chess).
28.10 28.11 28.12 28.13* 28.14 28.15 28.16 28.17	Kæme æxom Feræ æxom Mæcho Taran Be be bazikæ dærækæ bezæ ækæm Somæyæ soqunækæ bazikæ Somæyæ jajkæ æxom Dækæ kakæ	= = Mæcho bo Taran Be dærækæ bazkæ gemez ækæm = sunuqækæ baz kæ = =	I eat a little I eat much/a lot Don't go Tehran Come2 open the door I want to piss Semaya open the box Semaya I eat/want gum Hit my brother	He tries to close his pronunciation to that of adults: jish then bezæ for the adult form of Gemez: urinate
28.18 28.19 28.20 28.21 28.22	Med kæwtæ awækæ Eq Somæyæ æwæ chiyæ? Xalo Rezgar dætæka Daikæ masha bekæ	Merd = = Eq = = = tæmasha =	He died he fell into the water. A sound showing disgust Semaya what is that? Uncle Rezgar will hit you Mummy look/watch	While watching a film . While going to the wc
28.23 28.24 28.25 28.25	Mashin Næqashiyækæ kowa? Semæyæ zærat æxoi? Goshwarækæ gel æka	= = = =	Car Where is the painting? Semaya do you eat corn? The ear ring is hurting	He called it' makish' earlier His aunt had bought a new ear ring but it hurt her ear and she said… Pouya repeated her words
28.26 28.27 28.28 28.29	Mæy qozhno Xobin nale Xoa hafiz bero Pouya Fæk sændi?	= kozheno Mobin nayæle = = = bolai Pouya Fæket sænd?	Don't turn it off Mobin bothers me Good bye return [to] Pouya Did he buy snack?	 Special pronunciation: xobin for Mobin (Name) Inappropriate verb or suffix
28.30 28.31 28.32	Chai æxom Daikæ beibi qasikæ masha ækæm Piyayækæ lolækei shekand	= Daikæ beibi xas kæ tæmashai ækæm Piagækæ = =	I drink/want tea Mother set baby channel I (want to) watch The guy broke	

			the pipe	
28.33 28.34 28.35	Nanækæ geshti bexo Geshti cheshtækæ bexo Chesht xoshæ	= = =	The food eat all of it Eat all of the food The meal is delicious	
28.36 28.37 28.38 28.39 28.40	Da næna alæ xojwanæ Awækæ rezhandi Xom rezhandem Hawæ gærækmæ. Kakæ næhato	=Rana = = Awækei rezhand = = =	Grandma Rana is good, she is beautiful The water he poured I myself poured it That, I want it My brother (has not) didn't return	In reply to; Who poured the water?
28.41 28.42 29.43 28.44 28.45 28.46	Kæwt Beibi tamashakæ temo Semæyæ dærsækæ bexoenæ Semæyæ pefæk beri læ mædræsæ Læ dukanækæ taat sandi? Goshyækæ bedæ Pouya	= = = = = = saatet sand? = = men	It fell baby channel watch I will return Semaya study the lesson Semaya bring snack from school Did he=you buy watch from the store? The phone give to Pouya	A spoon was dropped from his hand Sændi=he bought/did he buy used for: did you buy? Instead of the pronoun 'me' he uses his own name!
28.47 28.48 28.49	Semæya becho mædræsæ, bash? æchem xalo Rezgar yæxchalækæ bazikæ	= = bo lai xalo Rezgar = baz kæ	Semaya go to school, ok? I go uncle Rezgar the fridge open it	
28.50 28.51	Ampolækæ dai le xoin hat Natanæ dærækæ	Ampolækei da lem xoini le hat Natwanem	The ampoule he injected to…it caused bleeding	 Inappropriate

	bazikæm	dærækæ bazkæm	Can't I the door open.	use of suffixes
	Chi nosagæ?	Chit nosagæ?		
28.52		=	What has he written?	
	Kakæ xæftegæ.			
28.53	ælom mædræsæ dærs æxonem	=	My brother has slept.	
28.54		ærom le mædræsæ dærs æxoinem	I go school to study	
	kifækæ shan			
	qesæ ækæm bawa			He meant: put the bag on your back to go to school
28.55		= bekæ shanet/shanem	Put the bag shoulder	
28.56		= = tæki bawa	I want talk grand pa	He raised the phone and said…
28.57	Daikæ æwæ chi ækei?	=	Mummy what are you doing?	His mother was busy with make up, Pouya asked her…
	Habæ nus ækæm			
28.58	Be cho mal	Habæ ænusem	Give it (to me), write I do	
28.59	Be Pouya bash bash?	Be becho mal	Come go inside(home)	
	Xomanæ			
28.60		Bero bo lai Pouya bash?	Come Pouya, OK?	Nus ækæm for ænusem= I want to write
28.61		Ini xomæ	Ours(for mine)	While calling me
28.62	Gosht æxom	=	I want/eat meat	In reply to: what do you want/eat Pouya?
28.63	Saætækæ terem	=	I bring the watch	
28.64	Kakæ hich naka	=	My brother is doing nothing	There was a watch on the table Pouya meant he wanted it
28.65	Xom be ban?	Xom bemæ ban?	May I come upstairs?	In reply to: what is your brother doing/ Lack of the required verb suffix.
28.66	Natwani bazikei?	=	Can't you open it?	I was opining a door. Pouya asked me…
	Næma chu			
28.67		Niyæ, gem bu	It disappeared, it went	I asked him: kowa mobailækæ?= where is the mobile?
28.68	Dærækæ nawæsem babæ læwla teto	=	I don't close the door, my father will return	I was going out the hallto wash my face, I told him' dærækæ bewæsæ= close the door' he replied…
28.69	Libasækei tær kerd	=	He made the clothes wet	
28.70	æwæ menum	=	It was me	

				Ke khamoshi kerd?=Who turned the TV off?
28.71 28.72	Lacho ta xom dærækæ bewæsem Dasæ awæ xalo Rezgaru	= Danishæ =	Go to the other side in order that I myself close the door Sit down That was uncle Rezgar	I asked him: 'ke tæleifonækei shekand?=who broke the phone?'
28.73 28.74 28.75 28.76 28.77 28.78	æwæ chi ækei? æchyæ dær? Babæ giyan dærækæ bewæsæ Næ danishem nayæm Sæyrkæ,mashakæ chi æka Habæ tæzwekæ fidæm aw Nækæwi yæxæ	= = Dananishem nayæm = tmæashakæ= = = = fereidæmæ = =	What are you doing? Are you going out? Dear daddy, close the door! **No sit down** Look, watch what it is doing Give me the beads to throw them into water. Be careful not to fall, it is icy(land)	Ungrammatical negation: I told him 'be danishæ= come sit dow' he replied The TV was showing a film about animals I told Pouya's mother to be careful. Pouya repeated my sentence
28.79 28.80 28.81	Shokwatæ xwardem Bikænæ tælæ Mai Soma	Shoklatem/ækæm xward = tæræ (ruim bo) mali Soma	Chocolate I ate Take it off it is wet Soma's home	In reply to : where did you go?
28.82 28.83	Hawæ chi bæbækæ gelya? Kowa kilækæm?	æwæ bochi bæbækæ gerya? Kowa kelilækæm?	Why did the baby cry? Wher is my key?	o
29.54 This continues but the data after this age doesnot involve any protoword or true word	Palam	Parham	Parham(his brother	He hadn't uttered it before