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March, 1997♣

## 1. Introduction

A central debate in the field of language acquisition has revolved, in recent years, around the widely held view that early grammars are functionally deficient. Such structural deficiency may entail a fully pre-functional stage (Guilfoyle and Noonan, 1988, 1992; Radford, 1990; Tsimpli, 1992 and others), or a partially functional stage (e.g., the early grammar has IP but not CP, as argued by Meisel and Muller, 1992). Alternatively, it has been assumed that functional structure is initially underspecified (Clahsen, 1991; Hyams, 1995; Hoekstra and Hyams, 1995). Other scholars, however, argue that the early grammar is functionally complete, and that apparent functional deficiency in the early stages of language acquisition should be otherwise accounted for (Poppel and Wexler, 1993; Lust 1994; Phillips, 1995; Borer and Rohrbacher 1996; among others).

Independently of this debate, functional structure has come to occupy an extremely central role in current theories of syntax and morphology and in models of their interface. It has thus become clear that the status of functional structure in the early grammar and the role of functional structure in Universal Grammar cannot be discussed independently of each other. Without an understanding of the role which functional structure plays in UG, it is hard to assess what would be the impact of its absence, or deficiency, in the early grammar. In turn, the correct theoretical description of the early performance should shed light on the role of functional structure in UG. In fact, in view of the role that functional structure plays in some current theories of grammar, a question may be raised in principle concerning the coherence of early grammars without functional structure. Generally put, the question is as follows: if the child makes do rather well without functional projections, do functional projections actually have any necessary function? As an illustration, consider the proposals put forth by Szabolcsi, 1989; Stowell, 1991, Noguchi,

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♣ Paper to appear in proceedings of the conference on morphological interfaces, held in Oporto, Portugal, in November 1995. Thanks to the audience in that conference as well as audiences in Calgary, Maryland and Utrecht for insightful comments.

1994; Longobardi, 1995; among others, according to which nominal reference is mediated through the presence of DP, while bare, non-DP NPs are non-referential predicates. If, indeed, the early grammar does not have DPs, but only bare NPs, do children assign reference differently from adults? And if there is a parallel system of grammatical reference utilized by the early grammar in the absence of functional structure, why are DPs ever introduced, being, as it were, redundant, and requiring a radical revision of an already functioning grammatical reference system in the early grammar?

Setting these important general issues aside, I will concentrate here on some current models of argument structure which link it to a functionally projected event structure. I will investigate the early grammar from that perspective, showing that argument structure in the early grammar is interpreted through a syntactic/functional representation and not through projection from lexical entries. I will further suggest that in the earlier stages of language acquisition, children have a full knowledge of functional structure, but an underspecified lexicon for substantive, non-functional entries, in contrast with many prevailing views of acquisition (see, in particular, Pinker, 1989; Gropen et al, 1991; and subsequent work). This conclusion will have ramifications both in the realm of acquisition and in the realm of UG. For acquisition, it would mean that (lexical) semantic bootstrapping hypotheses, such as those promoted by Pinker (1989) and others, cannot be maintained. For UG it would mean that in general, argument structure cannot be reduced to the lexical semantics of verbs, contra Jackendoff (1990), Levin and Rappaport (1994) and many others.

## 2. The Pre-functional Stage: a brief review.

Radford (1990), in putting forth his proposal for the existence of a pre-functional stage, suggests that the three stages in (1) are attested in language development:

- (1) (i) Pre-categorial stage
- (ii) Lexical stage (i.e., pre-functional)
- (iii) Functional Stage

Setting aside the pre-categorial stage, the lexical, pre-functional stage, has the characteristics in (2):

- (2) **Lexical stage:**
  - (i) N, V, A, P and their full categorial projections
  - (ii) Linearity parameters:
    - a. Head parameter
    - b. Adjunct parameter
    - c. Specifier parameter

The knowledge of lexical categories and their accompanying X'-properties, combined with the ability to project adjuncts, specifiers, and heads in the correct linear order accounts, for Radford, for the presence of relatively correct early word order configurations. Thus in (3), the possessor precedes the N head, appropriately, showing knowledge of word order internal to nominals. (4) and (5) exhibit the correct word order for subject-predicate, even when the subject is an expletive.

- (3) a. Mommy car  
 b. Big teddy bear supper  
 c. Claire pencil
- (4) a. It Wayne (D-22)  
 b. There mum (D-19)<sup>1</sup>
- (5) a. Baby talking  
 b. Daddy gone  
 c. Teddy fallen over  
 d. Man no go in there  
 e. Wayne not eating it  
 f. Hayley draw it  
 g. Daddy want golf ball

In turn, in (3)-(5), functional marking is (almost) completely absent. There are no agreement or tense markings, determiners are systematically omitted, and there is no genitive marking for the possessor in (2), all these suggesting the absence of functional structure. Once functional structure does emerge, Radford argues, it emerges across the board in many distinct functional domains, as (6) illustrates (functional elements in italics). Note also the presence of subject-aux inversion in (6a-b)):

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<sup>1</sup>The forms in (4) alternate with those in (i), at the same age, and Radford argues that in (i), the contracted copula should not be taken as evidence for the existence of a distinct functional head.

- i) a. That's Teddy (D-22)  
 b. Here's bubble (D-22)

- (6) a. Where's *my* hunky?  
 b. What color *is* these?  
 c. *Is* it *a* bird?  
 d. These *are* red flowers  
 e. *That* one goes here (H-24)

Note that the assumption that there are no functional projections in the early grammar commits Radford and others to claiming that in early questions such as those in (7), the WH element is not moved to CP, and that question interpretation is otherwise assigned by the child:<sup>2</sup>

- (7) a. What that? (D-19)  
 b. Where helicopter? (S-17)

### 3. Projecting Arguments from the Lexicon?

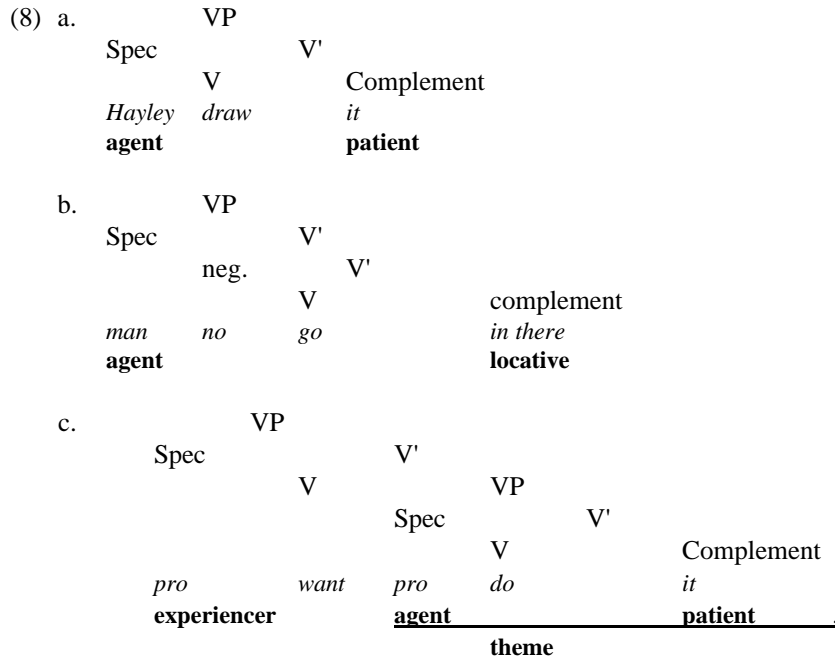
A number of empirical problems with the pre-functional stage have been discussed in the literature, and linked, primarily, to the properties of IP and CP and the nature of grammars which exhibit head movement to I and C and topic movement to [Spec,CP] (see, particularly, Pierce, 1992; Hyams, 1994, Wexler, 1994; and others). In this work I would like to center on another type of empirical problem for the pre-functional stage: the syntax of argument structure. I will show that the early linguistic behavior in that domain not only supports the existence of a fully specified functional structure in the relevant domain, but also suggests that children's knowledge of functional syntax is considerably more solid than their knowledge of the substantive lexicon. The

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<sup>2</sup>The assumption that in (7) question interpretation is assigned without movement to CP is trickier than it might appear at first. Note that it is not possible to assume that (7a-b) are WH-in-situ. First, at least in (7b) (and possibly in (7a) as well) there is overt movement of *where*, a non-subject. Radford (1990) as well as others do assume that in the early grammar phrase structural principles are known, and hence *where* must be, for the child as for the adult, in a post-subject position, requiring the postulation in the early grammar of WH-movement, but to a non-CP location. Secondly, in WH-in-situ grammars, interpretation is achieved through the presence of an operator which binds a variable in the WH-in-situ position (where such an operator is either the LF-moved WH-element itself, or an introduced operator which binds the WH-element functioning as a variable). In either case, it has been specifically proposed (see Aoun, Hornstein and Sportiche, 1981) that such an operator is adjoined to CP. In the absence of CP, such adjunction and the accompanying question interpretation represent a parallel formal interpretative mechanism for WH-movement which is available in the early grammar, but which is abandoned, without any positive evidence, by the adults.

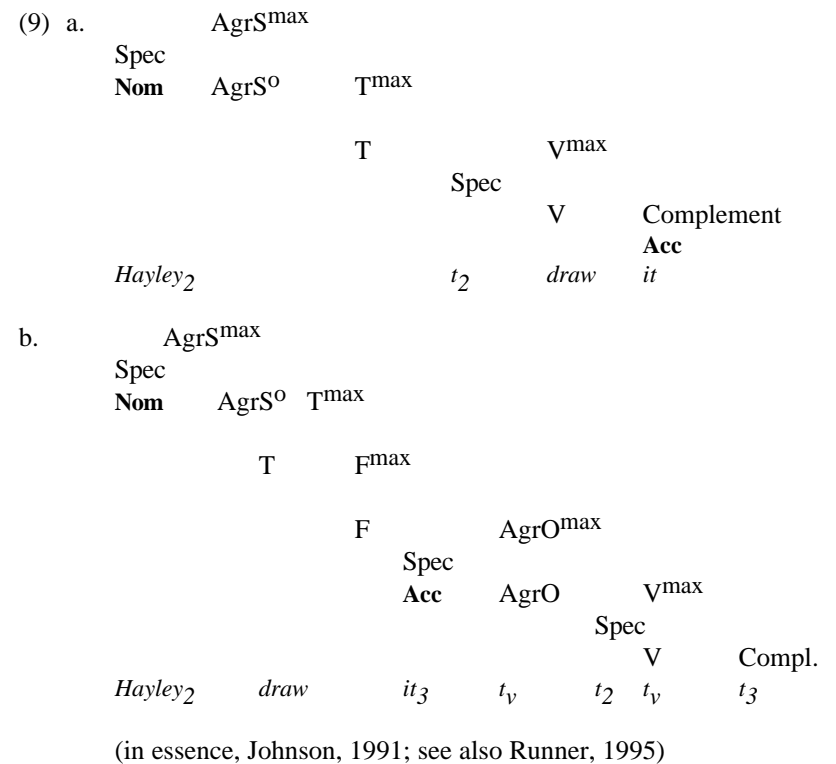
picture that emerges is of the child as a conceptually immature "grammar machine", maximizing the power of formal mechanisms to compensate for an impoverished, underspecified substantive lexicon.

Returning to the utterances in (5a-g), note that in order to predict the correct word order and the argument interpretation, it must be assumed by proponents of the pre-functional stage that children can associate logical subjects (i.e., external arguments) with specifiers of lexical projections and logical objects (i.e., internal arguments) with complements of lexical projections. Specifically, the early grammar must be capable of constructing the trees in (8), in essence small clauses, on the basis of lexically specified properties of verbs. If a verb such as *draw* is correctly used by the child, within a pre-functional model it must be assumed that the child has the knowledge that *draw* assigns, say, an AGENT and a PATIENT, and that the former is projected in [Spec,VP] while the latter is projected as a sister of V:



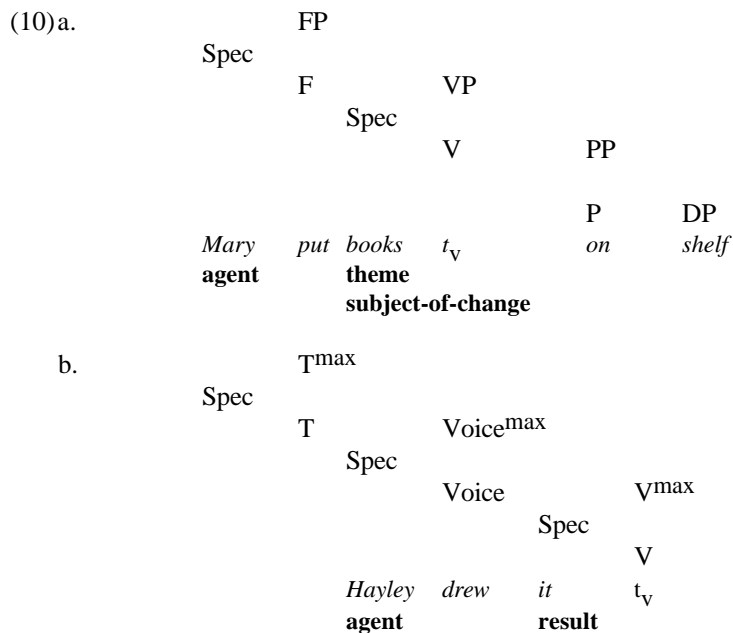
The early representations in (8a-c) violate the requirement that nominals have Case. In fact, within current syntactic models, the nominal arguments in,

e.g., (8a) must move to case positions, giving rise (by S-structure or Spellout) to structure (9a) or (9b):



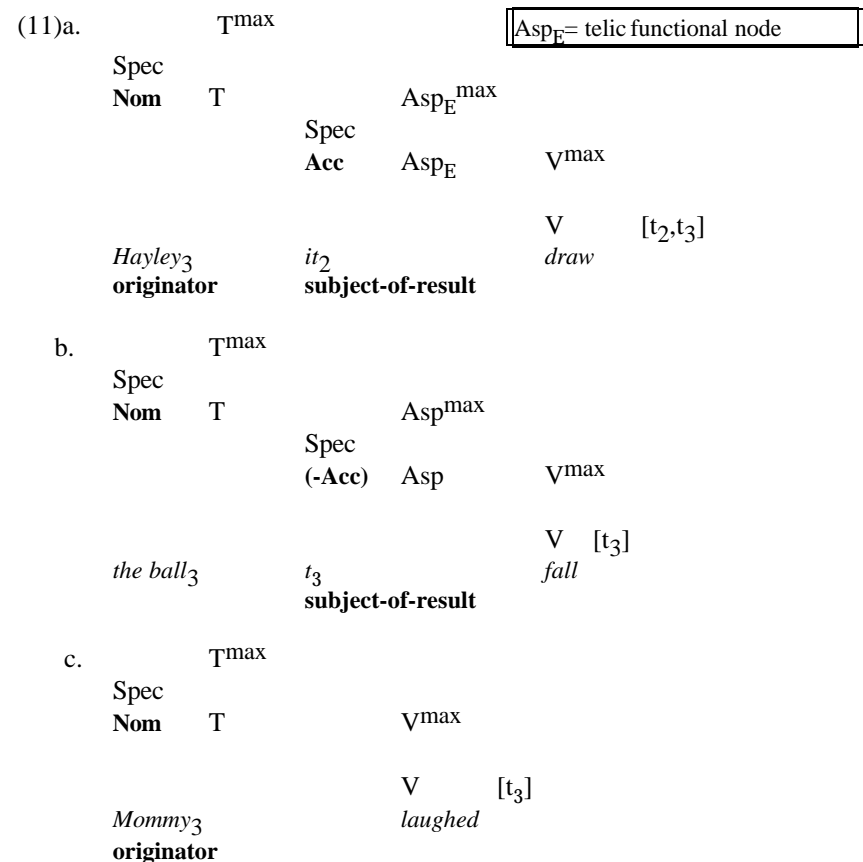
The assumed absence of such movement in the early grammar is not, however, in and of itself a problem. Rather, proponents of the pre-functional stage would assume that in the early grammar Case marking is irrelevant, possibly because it is a condition on DPs which are themselves absent in the absence of functional projections. Further,  $\theta$ -role assignment in (8a-c) does not appear to be problematic either, following the most commonly assumed systems of  $\theta$ -role assignment for the past decade. Consider, however, other approaches to argument projection, and specifically those of Hale and Keyser (1993), Kratzer (1994, 1996), Borer (1994, 1996) and van Hout (1992, 1996). According to these models, functional projections are crucial for the correct derivation of argument structure. Both Hale and Keyser (1993) and Kratzer (1994, 1996) propose that the external argument of the verb, contra much work from 1986 onwards, is at least sometimes assigned independently of the verb

and outside the VP, through functional structure, and that [Spec,VP] is reserved for certain types of "internal", selected arguments. For Hale and Keyser, this would be the case for sentences such as (10a), where the subject of *put* is assigned external to the VP in [Spec,FP]. For Kratzer (1994, 1996), an independent functional projection, VoiceP, assigns value to the external argument in accordance with the type of event involved, as in (10b):



For Borer (1994, 1996) and for van Hout (1996), it is the interpretation of the "internal" argument, the **RESULT** argument, that is conditioned by a functional projection, the structural equivalence of Chomsky's (1995) AgrOP. Considering specifically Borer (1994, 1996), the lexical entry of the verb specifies only the number of event participants, but not their roles. Nor is the verb itself specified as telic or non-telic. Rather, telicity is determined by a specialized node dominating the VP, and the argument in its specifier is interpreted as **SUBJECT-OF-RESULT** and is optionally assigned accusative Case. The other event participant, if there is one, will then receive the default role associated with the event, that of an **EVENT ORIGINATOR** (for reasons of simplicity, in the following trees structure which is not directly relevant is omitted and verb

movement is marked only where relevant):<sup>3</sup>



Crucially, in all these systems, some semantic roles are licensed by functional heads **alone**. If children have no functional projections, within these models they would be either prevented from having any argument structure altogether, or would be seriously limited in their abilities to produce certain interpretations. If children have a deficient functional structure, we expect

<sup>3</sup>For a more complete review, and specifically for the interpretation of triadic predicates and atelic verbs, both transitive and intransitive, see references.

them to have problems just in those areas where their functional structure is incomplete.<sup>4</sup>

Interestingly, the debate on the presence of functional structure merges here with another important debate in acquisition: the role of verb meaning in acquiring syntax. Pinker (1989) suggests that canonical syntactic configurations are learned by the child through observing (basic) verbs, learned from situations, in their syntactic environment, assuming that there are universal rules linking the lexical semantics of a particular verb **deterministically** to a particular predicate-argument structure and a resulting syntactic structure (SEMANTIC BOOT STRAPPING). In other words, a child who knows the meaning of *draw* also knows that *draw* has an external agent and an internal patient. Hearing the utterance *Mary drew the picture* thus enables the child to make at least a first attempt at constructing the phrase structure for her target language, hypothesizing, e.g., that English is SVO, and hence head initial. Note now that in the absence of any functional structure, proponents of the pre-functional stage must support semantic boot strapping, allowing the child to project the structures in (8) based exclusively on her knowledge of the lexical entries of the verbs projected and the linking between their meaning and the resulting syntax. In the absence of functional structure, there could not be any other clues available to the child, in principle. This implicational relation is repeated, for expository purposes, in (12):

(12) Pre-functional grammar  $\Rightarrow$  Semantic Boot Strapping

However, Semantic Boot Strapping has come under some criticism, primarily by Gleitman (1991, (1995) and other work. Specifically, Gleitman points out to the difficulties of learning verb meaning from situations (for children as well as for adults), especially when compared with the relative ease of learning the meaning of nouns from situations. Gleitman further suggests that rather than using verb meaning learned from situation to learn about

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<sup>4</sup>Unlike Borer (1994, 1996), van Hout (1996) assumes that all verbs are atelic, and that the movement of the argument specified as internal to [Spec,AgrO] renders the verb telic. Within her system, the role of the functional structure is to induce telicity. Proponents of the pre-functional stage could still adopt her system and project the structures in (8a-c) based on information in lexical entries, but the prediction would be that in the pre-functional stage there are only atelic predicates, and that children assign to, e.g., (8a) an atelic interpretation. While direct evidence bearing on this issue does not appear to be available, Antinucci and Miller (1976) have, in fact, argued the opposite conclusion on the basis of Italian data.

syntactic structures, it is the syntactic structure which helps the child refine basic concepts into specific verb meanings (SYNTACTIC BOOT STRAPPING).

Note, in this context, that as is predictable, if Gleitman is, indeed, on the right track, the meaning of verbs is strongly susceptible to manipulation by syntactic context, but not so the meaning of nouns. Consider in this view the sentences in (13):

- (13)a. The blog pushed the clob out of the droon  
 b. The blog stared the clob out of the droon  
 c. The blog looked the clob out of the droon
- (14)a. The blog stared at the clob  
 b. The blog looked at the clob

(13b), although a mental predicate, nevertheless is interpreted as involving a coercive effect on a "clob" when performed by a "blog", although this information could not possibly be coming from the denotation of *clob*, *blog*, or *droon*. This would not be the case in a syntactic context such as (14a). The interesting case, however, is that in (13c). Normally, (13c) would not be an acceptable utterance in English. However, it is clear that any attempt to impose an interpretation on it would involve ascribing to *look*, perhaps when performed by *blogs*, a coercive nature which is, again, entirely missing in (14b). It thus appears that it is the embedding of the verbs *stare* and *look* respectively in a structure identical to that in which *push* is embedded, or more specifically, the presence in (13b-c) (but not in (14a-b)) of a direct object which is interpreted as "affected", that leads to the relevant interpretation. Importantly, although *look* is the only clearly substantive element in (13c), it is nevertheless the primary one whose interpretation is modified to accommodate the structure. *Blogs*, it would appear, *look* differently from you and me, and to the extent that we do assign an interpretation to *blog* as based on (13c), it is so as to make it compatible with the modified coercive meaning of *look*.

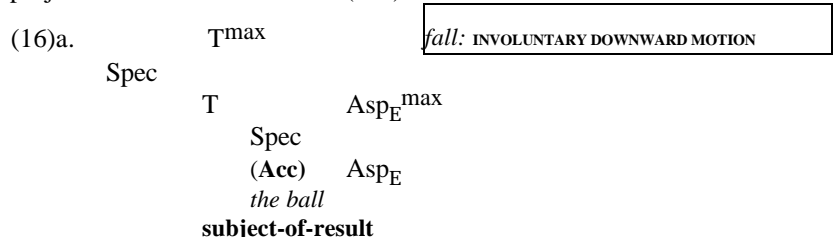
On the other hand, if the precise meaning of verbs, and especially their argument structure, cannot be learned from situations, and even more radically, the meaning of verbs is modified depending on the syntax of the arguments, then clearly the pre-functional approach to acquisition cannot be maintained. If the complete understanding of the meaning of particular verbs is crucially linked to its occurrence in a more complete syntactic structure, in the absence of such a syntactic structure, predicates could not be fully comprehended, and the correct placement of arguments, as in (4)-(5) becomes entirely puzzling. On the other hand, a rather different prediction is made by the assumption that the projection of arguments must be facilitated by functional projections, and

that the acquisition of precise verb meaning is dependent on the knowledge of syntactic structures. Specifically, it is predicted that there could exist, in the early grammar, a stage in which functional structure, and the argument structure dependent on it, are fully known, but the complete meaning of an individual verb may not be. Consider a hypothetical child familiar with the concept of falling as associated with the phonological string *fall*, understanding it to denote, e.g., involuntary downward motion. That child could then embed such a "concept" within a syntactic environment which is transitive or intransitive, resulting in the utterances in (15):<sup>5</sup>

- (15)a. Ball fall/Mommy fall
- b. Mommy fall ball

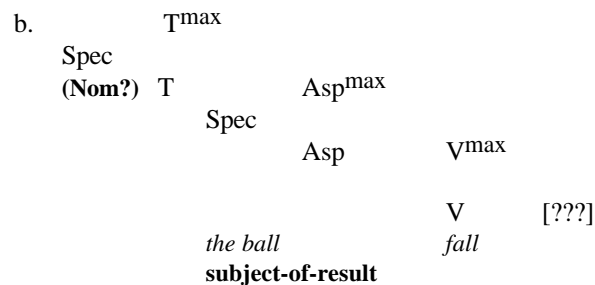
The claim here, note, is not that a child uttering (15), or anything similar to it, is mistakenly affixing a  $\emptyset$ -causative morpheme to *fall*, as may be the case for e.g., *drop-drop*, etc. Rather, the assumption is that the child is interpreting *fall* as a concept, and is only vaguely aware of its properties as a grammatical object. She is therefore using her fully articulated knowledge of **functional** structure to assign value to the arguments in a given situation.

Consider a specific scenario. Suppose the child views the ball fall. She recognizes the event as TELIC, and THE BALL AS SUBJECT-OF-RESULT. Within her grammar, SUBJECTS-OF-RESULTS reside in [Spec,Asp<sub>E</sub>], and aspectual nodes must be linked to TPs, or no event results (see Borer, 1996). The child then proceeds to project at least the structure in (16a):



<sup>5</sup>Refining our understanding of "concept" in the relevant sense, one might wonder whether the child even knows that *fall* is a verb. While it might be argued that such knowledge is, indeed, present at that stage, and only argument valency is not specified in the verbal entry, it might also be argued that the child does not know that the phonological string in question is a verb, and is assigning verbal force to it by embedding it in an extended functional projection (in the sense of Grimshaw, 1990) that is "verbal" in nature. For more discussion, see Borer (in progress).

Asp<sub>E</sub><sup>max</sup>, a member of a verbal extended projection, must dominate a lexical verbal head, therefore leading the child to project a VP, as in (16b) (but see fn. 5). We may assume that UG considerations would now drive the child to move *the ball* where it can be assigned nominative Case, which may or may not be in the same position as in the target language, as well as possibly move the verb:<sup>6</sup>



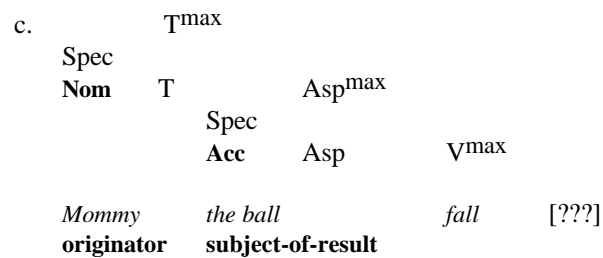
Other than assuming that *fall*, wherever it may land, has originated in V, the child knows nothing else about it. Specifically, she does not know enough to bar an additional argument from finding its way to [Spec,TP] where it is interpreted as EVENT-ORIGINATOR. And in fact, when our hypothetical event involves a mother dropping the ball, the child may very well end up with (16c):<sup>7</sup>

<sup>6</sup>A single argument with accusative Case is presumably ruled out by whatever derives Burzio's Generalization.

<sup>7</sup>Several questions are skirted here. First, the reader may wonder why the child assumes that the arguments are associated altogether with the verb altogether, establishing the links in (16b-c). In Borer (1994, 1996), it is suggested that such an association between the verb and the arguments is necessary if one is to have a unified lexical entry for verbs which have an identical basic meaning, but are found in different events:

- i) a. John built houses ATELIC
- b. John build the house TELIC
- ii) a. Mary hit the wall ATELIC
- b. Mary hit at the wall TELIC

While the objects in (ib) and (iia) are in [Spec,Asp], this is not the case for the objects in (ia) and (iib). Without tracing the arguments back to the verb, there would be little means, then, of stating in what sense the two occurrences of *build* and the two occurrences of *hit* constitute a unified entry. The reader should consult the references for further details.



Because in (16), there is a DP interpreted as **ORIGINATOR**, and another DP interpreted as **SUBJECT-OF-RESULT**, the interpretation of (16) is in fact that *Mommy* caused *ball* to undergo **INVOLUNTARY DOWNWARD MOTION**, although at no point is our hypothetical child explicitly ascribing a possible agent to the verb *fall*. Rather, the agent interpretation is derived from the presence of an event and an event originator, which are in turn licensed through the presence of a functional structure in the grammar of a (hypothetical) child who is ignorant of the fact that her target language does not quite do it this way.

**4. Early Projection of Arguments**

Are cases such as (15b) actually attested in the early grammar? As is well known, transitivity alternations in English are greatly overgenerated by children (see especially Bowerman, 1982 and subsequent literature), and some actual cases are given in (17):

- (17)a. It always sweats me (=makes me sweat) (4;3)
- b. This is aching my legs (5;3)

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On the other hand if all arguments (but not their projection location or interpretation) resides in the lexical entry of the lexical substantive heads, the "reconstruction" accomplished by the child is simply a procedure guided by UG. As there are arguments in the utterance, they must, per force, be associated with the substantive entry.

Although the account above is couched in terms of the system proposed by myself, a similar theoretical conclusion can be drawn for other systems which utilize functional structure in the projection of arguments (and see fn. 4 for some discussion of van Hout, 1996 in that context). Thus for Hale and Keyser (1993) or for Kratzer (1994, 1996), the presence of an agent in a situation would lead the child to project the relevant functional structure. As for both systems **SUBJECTS-OF-RESULTS** and **SUBJECTS-OF-CHANGE** project in [Spec,VP], their presence in the structure would lead the child to postulate V as well, all without availing herself at any point to the precise interpretation of the verb.

However, such cases of overgeneration are typically otherwise explained. As is well known, English has a rather productive rule of  $\emptyset$ -affixation which transitivizes intransitive verbs, and is responsible for the existence of (adult) pairs such as the following:<sup>8</sup>

- (18)a. drop-drop; sink-sink; move-move; break-break;
- b. burp-burp; gallop-gallop; jump-jump

A child uttering (18a-b), or an expression like it, is therefore quite possibly overgenerating a  $\emptyset$ -affixation rule present in the adult grammar, on a par with other well-known cases of overgenerated/regularized morphology in the early grammar. We are therefore looking here at two apparently competing models attempting to account for the same early behavior:

**(19) COMPETING MODELS OF CHILD PERFORMANCE**

adult knowledge	Model I	Model II
yes	i. Knowledge of basic lexical entries; ii. Projecting arguments on the basis of (i)	i. Knowledge of functional structure ii. Projecting arguments on the basis of (i)
no	iii. Morphological Overgeneration	iii. Lexical entries are not full) grammatical objects

Let us now consider the predictions made by Models I and II respectively for a language that, unlike English, marks changes in argument valency with overt, non- $\emptyset$ , morphology. Such a language is Hebrew, where transitivity alternations and in general, argument structure changes, are typically morphophonologically marked, and where  $\emptyset$ -affixation is not attested. A Sample of transitivity alternation for various verb classes is given in (20)-(21).<sup>9</sup>

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<sup>8</sup>It is at times suggested that only the forms in (18a) are instances of a productive  $\emptyset$ -affixation rule, while the cases in (18b), in which a  $\emptyset$ -affix is attached to an unergative verb, are subject to unique additional constraints which do not generalize (see, most recently, Hale and Keyser, 1993). It is not clear, however, that the data actually supports this claim, in that the forms in (18b) seem largely as productive, and as unrestricted, as the forms in (18a).

<sup>9</sup>Hebrew, a Semitic language, has an autosegmental morphological system, where the basic meaning is indicated by a root, typically consisting of 2-4 consonants, while

## (20) DERIVED CAUSATIVE FORMS (ARGUMENT ADDITION):

Base Form		Derived Form	
Intransitive	Transitive	Causative	
	'AkAl (I)	HE-'EKil (V)	eat/feed
paTAX (I)		hiPRiAX (V)	flower/make flower
naPAI (I)		HiPil (V)	drop/drop
zAZ (I)		HiZiZ (V)	move/move
rAC (I)		HEric (V)	run/make run
daHAR (I)		HiDhir (V)	gallop/make gallop
	ra'A (I)	HEr'A (V)	see/show

## (21) DERIVED INTRANSITIVE FORMS (ARGUMENT SUBTRACTION)

transitive	intransitive	
paTAX (I)	niPTAX (II)	open/open
SaBAR (I)	niSbar (II)	break/break
peREq (III)	hiTPAREq (VII)	take apart/fall apart
biSEl (III)	HiTbaSEl (VII)	cook/cook

Given the picture in (20)-(21), there is little reason for a child learning Hebrew to assume that the language has a  $\emptyset$ -affixation strategy. Nevertheless, the following forms are attested in early Hebrew (see Berman 1982; 1985):

## (22) Ages 2;2-2;11

- a. ra'ITI (I) 'et ha-ciyurim le-aba  
 saw-I OM the-paintingsto-Daddy  
*adult: HEr'ETI (V) 'show'*

morphological information associated with category type, number of arguments, and inflection is marked by means of both affixes and a vocalic melody. Morpho-phonologically, the causative forms in (20) are clearly more complex, and plausibly derived from the base forms, while in (21) it is the intransitive forms which are more complex and plausibly derived from the transitive ones. Here and below, root consonants are bold and the morphological affixation/vowels are small capitals. The morphological class of the verbal form is indicated by roman numerals (see section 5 and table (26) for more discussion of morphological classes). All forms are inflected in 3.m.sg. past tense, typically the least morphologically marked form. Irrelevant aspects of Hebrew phonology are greatly simplified in (20)-(21) for ease of presentation.

- b. 'ani roca Se-aba YOKAl (I) 'oti 9akSav  
 I want that-Daddy eat me now  
*adult: YA'AKil (V) 'feed'*
- c. 'ima, zUZI (I) l-i 'et ha-kise'  
 Mommy, move-intrans. for-me OM the-chair  
*adult: TAZiZi (V) 'move' trans*
- d. Tir'i 'ex kol ha-xalabSAPAK (I)  
 look how all the-milk spilled-trans  
*adult: niSPAK (II) 'spilled' intrans.*
- e. lama ha-delet lo poTAXAT (I)?  
 why the-door no open-trans  
*adult: niPTAXAT (II) 'open' intrans.*

The examples in (22a-e) are interesting for several reasons. Note that with the exception of the inappropriate match between verbal morphology and argument structure, they are syntactically fully well-formed and show a good knowledge of functional structure: first, there is full use of object markers, preposition, and personal pronouns. Second, they include well-formed cases of embedding with an overt complementizers (22b) as well as cases of WH-movement (22d,e). Thirdly, they exhibit no errors of inflectional morphology: tense and agreement markers on the verbs and the prepositions are correct, and the actual forms used by the children are morpho-phonologically well-formed, if not with the argument structure given. In fact, agreement mistakes are almost non-existent, especially at that age, and clearly wrong forms are typically only attested in morpho-phonologically deviant cases. Fourth, the early behavior could not be attributed to a preference for a form associated with "less" arguments, as children err in both directions, using intransitive forms in transitive contexts, as well as using transitive forms in intransitive contexts. Finally, while the forms used by the children in (21)-(22) all belong to morphological class (I), the more basic and the most common morphological class, and are therefore morphologically less complex than their "correct" counterparts, a larger sample shows that an account based on morphological simplicity or a preference for class (I) morphology is untenable. Note that in (23e) the children are avoiding the very same form that they are preferring in (23e), and that the opposite form is preferred in the pairs (23g) and (23h) (sample from utterances of children between 2;6 and 3;6, as given in Berman, 1982):

## (23) CHILDREN'S FORMS WITH MULTI-ARGUMENT VALENCIES:

Form	Adult	Child	Adult meaning	Child meaning
a. <b>Horid</b> (HiCCiC)	√		take-down (x,y) lower (x,y)	
<b>yarad</b> (CACAC)	√	√	go-down (x) descend(x)	go-down(x) descend(x) take-down (x,y) lower (x,y)
b. <b>Hiḵ'ib</b> (HiCCiC)	√		hurt (x,y)	
<b>ka'ab</b> (CACAC)	√	√	hurt (x)	hurt (x) hurt (x,y)
c. <b>HiS'ir</b> (HiCCiC)	√		left behind (x,y)	
<b>niS'ar</b> (NiCCAC)	√	√	stay behind (x)	stay behind (x) left-behind (x,y)
d. <b>Heqim</b> (HiCCiC)	√		get up (x,y)	
<b>qam</b> (CACAC)	√	√	get up (x)	get up (x) get up (x,y)
e. <b>Sapak</b> (CACAC)	√	√	spilled (x,y)	spill (x,y) spill (x)
<b>niSpak</b> (NiCCAC)	√		spilled (x)	
f. <b>patax</b> (CACAC)	√	√	open (x,y)	open (x,y) open (x)
<b>niptax</b> (NiCCAC)	√		open (x)	
g. <b>liḵlek</b> (CiCCiC)	√	√	soil (x,y)	soil (x,y) soil (x) (middle)
<b>hitlaklek</b> (HiTCAcCEC)	√		soil (x) (middle)	
h. <b>xibeq</b> (CiCCiC)	√		hug (x,y)	
<b>hitxabeq</b> (HiTCAcCEC)	√	√	hug (xy,xy) (reciprocal)	hug (xy,xy) (reciprocal) hug (x,y)

Furthermore, Levi (1988) points out that children at the relevant age use morphological verb classes at percentages which are roughly equivalent to their distribution in the language as a whole. Rather, the errors occur not in morphologically complex forms, but in pairs of derivationally related verbs. Berman (1982) reports that in controlled

observations of Israeli preschoolers, the same verb-root occurred in more than one class for the speech of any observed child in only about 10% of a total of over 1000 verb tokens (160 distinct roots). It is clear that the children seem to prefer one form, making multiple use of it and allowing the syntax to assign the necessary argument structure. In summarizing her observations, Berman (1982) reaches, for this stage, the following conclusions:

A given verb-root is used in only one pattern, often correctly, but also incorrectly by neutralization of a required distinction. Verb-root and pattern are unanalyzed lexical wholes, much as are words like *play* and *fall* for English speaking children. (p. 179)

We may consider briefly how plausible it would be to assume, under these circumstances, that the Hebrew learning children are using  $\emptyset$ -affixation. First, note that we would have to assume not only that they use  $\emptyset$ -affixation for the addition of an argument, as is the case with English  $\emptyset$ -affixation, but also to de-transitivize transitive verbs and to form reflexives, all in a context of a language in which argument structure alternations are heavily marked. Second, for English speaking children, multiple uses for  $\emptyset$ -affixation are not attested. The only cases attested are, as in (17), cases of argument addition, which are fully compatible with an overgeneralization of the adult rule. In the absence of  $\emptyset$ -affixation in English learning children for de-transitivization or for reflexive formation, we must assume, rather implausibly, that in a language where there is no evidence for  $\emptyset$ -affixation, children make massively varied use of it, but in a language where there is, in fact, evidence for it, children restrict themselves to the environments in which there is direct evidence for the rule's existence. As we will see below, there is a third reason to believe that a  $\emptyset$ -affixation strategy as an account for the Hebrew learners behavior is not plausible: if, indeed, sentences such as (17) give evidence that English learners overgenerate an existing word-formation rule, then we expect Hebrew learners to overgenerate their word-formation rules as well, and such a stage is, indeed, attested. It is attested, however, at a later stage, which corresponds closely to the age range in which the English overgeneration is attested as well.<sup>10</sup>

<sup>10</sup>One may suggest at this point that the early grammar's problem is nevertheless a structural one, rather than lexical, and that the problem is that the forms in (20) and (21) are syntactically derived, through head-to-head movement, having roughly the structure in (i). If the child cannot derive, syntactically, complex morphological forms, or if the child does not know the morphology associated with these derivations, she may end up associating more than one argument structure configuration with one form. The

Assuming, then, that cases such as (22)-(23) are cases of multiple argument valency associated with a single item, rather than  $\emptyset$ -affixation, clear consequence emerge for models of language acquisition. At least in the relevant age range, roughly until 3;6, children are clearly capable of assigning the correct syntax and the correct interpretation to utterances in which they do not have a complete knowledge of the substantive lexical entry, or specifically, its argument valency. It therefore follows that the Semantic Boot Strapping hypothesis put forth by Pinker (1989) and others cannot be true as such.

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rationale here appears akin to that which drives the assumption that root infinitives are used in the early grammar because the child does not yet know the inflectional morphology associated with agreement and tense, and is therefore sticking to one form:

- i) a. [<sub>XP</sub> (V)-morphology [<sub>VP</sub> V]  
 b. [<sub>XP</sub> (II/VII) morphology [<sub>VP</sub> V]

(Note, incidentally, that at least for (ib), XP must be functional, of a violation of the Projection Principle would result.)

Although I will propose below that (i) is quite akin to what the Hebrew-learning child assumes at a subsequent stage (but is still distinct from the adult behavior, see section 5), it is not clear that the comparison between root infinitives and the forms in (22)-(23) is possible. First, Borer and Rohrbacher (1996) argue that for the inflectional system, in the absence of morphological knowledge the child will not only adhere to the least inflected form, but will also project the syntactic structure that is compatible with it, i.e., infinitives or participles, but not, say, an infinitival form in a tensed, agreeing context. The Hebrew learning child, on the other hand, does not adhere to the least inflected form, nor does she project the syntactic structure that is compatible with it. Rather, what we find is a complete mismatch between morphology and syntax: the child uses non-causative morphology, but projects causative syntax, presumably a more complex one, or alternatively, the child uses reflexive-intransitive morphology (derived from transitive forms) but projects a transitive structure. In other words, unlike the case of inflectional morphological learning, the child does not show a conservative strategy, but rather projects syntactic structures which are considerably more complex than her morphological knowledge.

Viewed from a different perspective, note that the point is orthogonal to the rationale altogether. When considering a morphologically non-complex transitive form, such as *Sapak* 'spill', used by the child to mean both transitive 'spill' and intransitive 'spill', we must assume not only that the child does not know how to derive, morphologically or syntactically, intransitive 'spill', *niSapak* from transitive 'spill' *Sapak*, but also that she is under the erroneous impression that the form she knows and use, *Sapak*, could mean both. She therefore clearly does not have an adult knowledge of the entry of the underived form *Sapak*, such complete knowledge including the information that it means transitive, but not intransitive, 'spill'.

Rather, another model of acquisition emerges, having, roughly, the following stages (and see Berman, 1982, 1985 for a similar proposal):

- |                       |                     |
|-----------------------|---------------------|
| (24)(i) N, A          | the naming stage    |
| (ii) functional stage | the syntactic stage |
| (iii) "lexical" stage | verb-meaning stage  |

In stage (i), as suggested by Gleitman (1991), (1995), the children acquire the conceptual and the grammatical information associated with nouns and quite possibly with modifying adjectives. We may assume that it is at this stage that children acquire the knowledge that certain phonological representations correspond to generalized, predicate-type concepts, such as a "vision related" predicate, an "involuntary downward motion" predicate, etc. These are in turn projected into a functionally complete structure, which is used to embed that vague predicate in the relevant argument structure, as illustrated in the hypothetical case in (16) above, and again, below, in (25). It is only later, at a subsequent stage of acquisition, that a more articulated, sophisticated lexicon comes into existence, and the child learns to fine-tune her generalized predicates into subtler ones, which vary along lines of argument valency as well as along possible other dimensions.

Consider now a concrete derivation involving the token *yarad* used in the early grammar to mean 'lower, take-down' as well as 'go down, descend' (cf. (23a)). It is different from our hypothetical *fall* in only one respect: while *fall* is difficult (but not impossible) to associate with an atelic event, this is not the case for 'go down' or 'descend' or their Hebrew equivalents. Depending, then, on the information which the child seeks to convey, she will generate (25a) for a telic-causative, (25b) for a telic-intransitive and (25c) for atelic-intransitive -- activity. The syntactic structure in (25b) is that of unaccusative predicates. The syntactic structure in (25c) is that of unergative predicates. Both exist in the adult grammar, as independent tests of unaccusativity and unergativity show (see Borer, 1994 for discussion):

- (25)a. TRANSITIVE DERIVATION ('lower') :
- |                   |                          |            |                |                              |
|-------------------|--------------------------|------------|----------------|------------------------------|
| $T^{\max}$        |                          |            |                |                              |
| Spec              |                          |            |                |                              |
| <b>Nom</b>        | <b>T</b>                 |            | $Asp_E^{\max}$ |                              |
|                   |                          | Spec       |                |                              |
|                   |                          | <b>Acc</b> | $Asp_E$        | $v^{\max}$                   |
|                   |                          |            |                | V, [??? number of arguments] |
| <i>Danny</i>      | <i>'et ha-kadur</i>      |            |                | <i>yarad</i>                 |
| <b>Danny</b>      | <b>OM the-ball</b>       |            |                | <b>lowered</b>               |
| <b>originator</b> | <b>subject-of-result</b> |            |                |                              |
- b. INTRANSITIVE DERIVATION, TELIC, UNACCUSATIVE ('go down', accomplishment):
- |            |          |                          |                |                             |
|------------|----------|--------------------------|----------------|-----------------------------|
| $T^{\max}$ |          |                          |                |                             |
| Spec       |          |                          |                |                             |
| <b>Nom</b> | <b>T</b> |                          | $Asp_E^{\max}$ |                             |
|            |          | Spec                     |                |                             |
|            |          |                          | $Asp_E$        | $v^{\max}$                  |
|            |          |                          |                | V [??? number of arguments] |
|            |          | <i>Danny</i>             |                | <i>yarad</i>                |
|            |          | <b>subject-of-result</b> |                | <b>went-down</b>            |
- c. INTRANSITIVE DERIVATION, ATELIC, UNERGATIVE ('descend', activity)
- |                   |          |              |            |                             |
|-------------------|----------|--------------|------------|-----------------------------|
| $T^{\max}$        |          |              |            |                             |
| Spec              |          |              |            |                             |
| <b>Nom</b>        | <b>T</b> |              | $v^{\max}$ |                             |
|                   |          |              |            | V [??? number of arguments] |
|                   |          | <i>Danny</i> |            | <i>yarad</i>                |
| <b>Danny</b>      |          |              |            | <b>descended</b>            |
| <b>originator</b> |          |              |            |                             |

Equally clear consequences can be drawn for adult grammars and for UG in general: if it is possible to assign close to full, correct meaning to utterances such as (22a-b) or (13a-c) without fully specified lexical entries for the verbs, then the assumption that predicate-argument structure is determined by the verb's lexical semantics is clearly on the wrong track. Rather, we must assume that along the lines suggested by the different proposals considered in section 3,

argument structure, possibly as related to event structure, is largely determined by syntactic structures, rather than projected from the lexicon.

### 5. Learning Argument-Structure Changing Morphology.

While the Hebrew early performance, illustrated by (22)-(23) cannot be plausibly reduced to overgenerating  $\emptyset$ -affixation, an important question concerns the behavior of English speaking children, as recorded by Bowerman (1982) and others. For these children, the overgeneration of  $\emptyset$ -affixation does seem like a plausible alternative.

In fact, if we assume that the English learners are overgenerating within the bounds of their native Morphology, we can account for what otherwise would be a rather puzzling mismatch between the Hebrew learning children and the English learning ones. Supposing that developmentally, they go roughly through the same stages, note that the one stem/several argument valencies behavior appears to persist in English speaking children much longer than in Hebrew speaking ones. Thus cases such as those in (22)-(23) are extremely rare after 3;6, but the bulk of the overgenerated cases discussed in the literature in the speech of English learners are attested in considerably older children, sometimes over 5 years old. On the other hand, at the age that the English speaking children appear to persist in a behavior which their Hebrew speaking counterparts have long abandoned, the Hebrew learners are engaged in something completely different: they experience a "morphological explosion" of sorts, undertaking to systematize and regularize a morphological system which for adults is ridden with exceptions. If, on the other hand, English learning children are utilizing a  $\emptyset$ -affixation rule, then the children learning English and the children learning Hebrew may very well be doing the same thing: regularizing the argument-structure-changing morphology.

Let us return to the characteristics of Hebrew morphology. Different morphological classes tend to correspond to particular event structure configurations, as in table (26):

(26) HEBREW MORPHOLOGICAL CLASSES: CANONICAL MEANINGS AND ARGUMENT STRUCTURES:<sup>11</sup>

<sup>11</sup>Two additional classes, (IV) and (VI), function exclusively as passives of (III) and (V) respectively. Form (II) at times functions as passive of (I). Passive forms, at any rate very late in the development of Hebrew, are not considered here.

	Class	Dominant Event/Argument Valency	Example
I	CACAC	not fixed	<b>ba</b> nA(x,y), built TELIC <b>na</b> pAl(x) fell TELIC <b>ʔa</b> bAd(x), worked ATELIC <b>da</b> xAp(x,y), pushed ATELIC
II	NI <del>CC</del> AC	TELIC INTRANSITIVE	<b>ni</b> SbAr(x) broke <b>ni</b> dlaq(x) became-lit
III	Ci <del>CC</del> EC	TELIC TRANSITIVE	<b>si</b> pEr(x,y) improved <b>li</b> mEd(x,y,(z)) taught <b>si</b> gEʔA(x,y) made-crazy
V	Hi <del>CC</del> iC	a. TELIC TRANSITIVE (causative)	<b>he</b> 'Eki(x,y,(z)) fed <b>ho</b> rD(x,y) lowered <b>hi</b> ktib(x,y) dictated
		b. TELIC INTRANSITIVE (inchoative)	<b>hi</b> Smm(x) became-fat <b>hi</b> ghlD(x) healed (wounds)
VII	HITCa <del>CC</del> EC	a. TELIC INTRANSITIVE	<b>hi</b> TpaFEq(x) fell-apart <b>hi</b> TraTEb(x) became-wet
		b. derived reflexive/ reciprocal. Event type as in the source verb.	<b>hi</b> STaFEq(x-self) combed-self <b>hi</b> T'APER(x-self) made-up-self <b>hi</b> TxAbeq hugged-reciproc. (x-y,(y-x))

Some aspects of the table in (26) are exceptionless. For instance, classes (II) and (VII) are never transitive. However, the table in (27), a (partial) list of motion verbs, all intransitive and atelic, and their respective morphological classes should give the reader some measure of the degree to which class membership is, in fact, predictable from a combination of the type of event involved and argument valency:

(27) MOTION VERBS, MORPHOLOGICAL CLASS MEMBERSHIP:

Motion verb	Class
<b>zaz</b> moved	I
<b>hi</b> StobEb wondered	VII
<b>na</b> dAd wandered	I
<b>ra</b> c ran	I
<b>hi</b> TroEC ran around	VII
<b>qa</b> pAc jumped	I
<b>qi</b> peC jumped around	III
<b>di</b> leg jumped	III
<b>ha</b> lAk walked	
<b>hi</b> ThAlEk strolled	VII
<b>ti</b> yeI strolled	III
<b>ne</b> xPaZ hurried	II
<b>mi</b> her hurried	III
<b>hi</b> TqAdem progressed	VII
<b>hi</b> mSik continued	V

(26), then, represents only a rough set of correlations, and falls very short of being a deterministic system. On the other hand, when only productive morphology is considered, (26) does give a more accurate picture, raising the clear possibility that along lines first suggested in Aronoff (1976), analytic morphology is distinct from productive morphology, and it is only the latter that is a truly generative system (and see Bolotsky 1982 for more discussion).

Having emerged from the functional but non-lexical stage, the Hebrew learning child now embarks upon learning the ways in which the morphophonology of an item relates to its argument structure and to its valency. But she does not progress on an item-by-item basis. Rather to the contrary, she is making enthusiastic use of precisely those aspects of the morphological system which are rule-governed, resulting in many overgenerated forms as well as neologisms. Berman (1982) describes this behavior as follows:

Patterns are varied for numerous roots, and in many different contexts, while errors in the form of pattern-mixing and creative innovations provide evidence of a systematic grasp of the principle of semantic core of root plus pattern variation. (p. 179)

A sample, based on Berman (1982) and Berman and Sagi (1981) is given below:

- (28)a. uf, at Kim9at **hclAtr(V)**oti  
 ex. you almost made-dive me  
*novel, from calA(I), 'dive'*
- b. ima, teSarveli li 'et ha-xulca  
 Mommy, sleeve-up for-me OM the shirt  
 = 'roll up my sleeves'  
*novel, from Sarvul, 'sleeve', a noun.*
- (29)a. lama 'at **MAdxpA(V)** 'oti kaka (3;2)  
 why you push me so  
*adult: doXepET(I) 'push'*
- b. 'ani yoda9at lebad **LE-HAxlC(V)** 'et ha-na9alayim (3;3)  
 I know alone to-remove-shoes OM the-shoes  
*adult: LA-xloc(I) 'remove-shoes'*
- c. ze mamaS **MASrP(V)** 'oti, ha-SemeS (4;7)  
 this really burns me the-sun  
*adult: soRrP(I) 'burn'*

What is noteworthy in the sample (28)-(29) is the correlation between the form used by the child (here always (V)), and the meaning intended. In all these cases, the syntax of the argument structure as well as the meaning of the predicate are those of causation, although the existing lexical entry in the language does not employ the form (V) which has the canonical causation interpretation. The children, however, coin these forms, using the canonical causation morphology.

The claim that children "regularize" the morphological system must, of course, be substantiated not only by the presence of "regularized" forms, but by the absence of "de-regularizing" mistakes: cases where the language does use the canonical morphological form, but the child errs in using a non-canonical one. Concerning this question, Berman (1982) reports an interesting picture. While children do make errors with canonical forms, they only make them within the set of options made available by the language as indicated in table (26). Note, specifically, that transitive telicity can be expressed productively by both class (III) and class (V), and that intransitive telicity can be expressed productively by both (II) and (VII). Within these possible variations, children do, indeed, err, and in both directions: they use (III) for (V) and (V) for (III), or alternatively, (VII) for (II) and (II) for (VII). Uses of (III,V) for (II,VII), or (II,VII) for (III,V) are not attested (examples primarily from utterances of children between ages 4-5)

- (30)a. ha-qosem **9lEm(III)** 'et ha-Sapan  
 the-magician made-vanish OM the rabbit  
*adult: HE9lEm(V) 'make-disappear'*
- b. 9akSav 'at **MASmIXA(V)** 'oti  
 now you cheer-up me  
*adult: MESAMAXAT(III) 'cheer'*
- (31)a. lama ze ha-kol **NlprAg(II)?**  
 why this all fell-apart  
*adult: HITpAReg(VII) 'fell apart'*
- b. 'ani mit9aleh(VII) kSe ata 9ose kaka  
 I get-offended when you do this  
*adult: NE9elsb(II) 'get-offended'*

Here again children show a clear preference for grammar over the learning of individual items, further supporting the claim that they are "grammar machines" of sorts, over-grammaticalizing what should not be grammaticalized, and avoiding, best they can, those aspects which cannot be grammaticalized at all, such as morpho-phonological exceptions. Furthermore, consider, specifically, the forms in (29):

(32)

adult form		child form	root
<b>doXep<sub>ET</sub></b> (I)	'push'	<b>MAdxp<sub>A</sub></b> (V)	<b>d.x.p</b>
<b>LA-xloc</b> (I)	'remove-shoes'	<b>LE-HAxlC</b> (V)	<b>x.l.c</b>
<b>soRrP</b> (I)	'burn'	<b>MASrP</b> (V)	<b>s.r.p</b>

What is striking is the fact that the children are not inventing completely new words here, nor are they deriving a complex form from an existing one, as is the case in (28a). Rather, they are using the **correct** root of the entry which is already present in the language, but they modify its morpho-phonology so as to make it conform to the canonical structure. What knowledge, then, does the child bring into this word formation? It clearly consist of a word formation component, basically along the lines of (26), but also of some "basic" lexical entry, containing the consonantal root and its generalized, conceptual meaning. However, that entry does **not** contain a full morpho-phonology specification, leaving the child free to re-invent it, so to speak, in accordance with the argument structure and event structure intended. I suggested that at the previous stage entries are generalized concepts which are combined with full functional structures to yield interpretation. At this subsequent stage, the child still has only a generalized lexical entry, containing the root and related to a

concept. Plausibly, this entry is inserted into a syntactic structure, containing the functional event structure and is morphologically marked in accordance with it. In fact, the child's behavior at this stage is entirely compatible with assuming that at this stage of the early grammar, the morphological classes in table (26) are functional in nature, marking the verb as agreeing with a syntactically projected event structure.<sup>12</sup>

Let us consider the grammar in this stage of development. Previously, the child, did not know the number of arguments associated with a particular lexical entry, and instead, allowed the functional structure to generate the event structure and to project arguments as they are licensed exclusively by the syntax. Suppose now that that stage has given way to a subsequent stage in which the child is still not associating a fixed number of arguments with an entry, but instead, she is assuming that her generalized, "conceptual" entries exhibit agreement with the functional event structure:

(33)a.  $hiCCiC/CiCCeC = ACC ASSIGNING TELIC HEAD$   
 $T^{max}$

Spec			
<b>Nom</b>	T	Asp <sub>E</sub> <sup>max</sup>	
	Spec		
	<b>Acc</b>	Asp <sub>E</sub>	V <sup>max</sup>
		hiCCiC	
		<b>CiCCeC</b>	V
<i>ze</i>	<i>'oti</i>		<i>s.r.p.</i> , [???-number of arguments]
this	me		'burn'
<b>originator</b>	<b>subject-of-result</b>		

<sup>12</sup>The assumption that at this stage of the early grammar argument-structure changing morphology is analyzed as functional leaves an important puzzle unresolved: why is this "functional" morphology acquired so much later than more typical inflection, and why do the children not use it conservatively, as they do in the case of inflectional morphology (see fn 10 for discussion). One possible answer to this question may lie precisely in pointing to the existence of so many forms with identical morphological marking, but distinct event structure (or alternatively, distinct morphological marking but identical event structure, as in (27)), a situation not attested with tense or agreement. A fuller resolution of this question must await further research.

b.  $niCCaC/hitCaCCeC = NON-ACC ASSIGNING TELIC HEAD$   
 $T^{max}$

Spec			
<b>Nom</b>	T	Asp <sub>E</sub> <sup>max</sup>	
	Spec		
		Asp <sub>E</sub>	V <sup>max</sup>
		niCCaC	
		<b>hitCaCCeC</b>	V
<i>ha-migdal</i>			<i>p.r.q.</i> , [???-number of arguments]
the tower			'dismantle'
<b>subject-of-result</b>			

Importantly, note, the morphology in (33) does not itself have any arguments (unlike, e.g., an abstract causative verb), and cannot be perceived as adding, or in the case of (33b) "absorbing" any arguments. The arguments still originate with the verb, but are given their interpretation in the event through the functional structure.

To schematize the developmental sequence thus far, then, the following stages have been identified:

(34) DEVELOPMENTAL STAGES, ARGUMENT STRUCTURE:

I	Naming (N,A)	???	???	???
II	↓	Argument valency not systematically known	Argument valency (of events) not marked morphologically	Complete functional structure
III	↓	↓	Argument valency marked, but marking is <b>functional</b> .	(at least in the domain of event structure and Case) ↓
ADULT	↓	Argument valency known ↓	Argument valency is property of <b>substantive</b> entries.	↓

A complete analysis of the Hebrew morphological system is clearly outside the scope of this paper, but it is clear that even at stage (iii), the children are not yet possessed of an adult system. There are weighty arguments against assuming that argument-structure-changing morphology in Hebrew heads functional

projections. Rather, in the adult system some argument-structure changing morphemes are affixed through a non-syntactic word-formation rule, while others may project syntactically, but heading lexical, rather than functional projections (e.g., as abstract verbs, see Borer, 1991, for some discussion). For adults, the number of arguments associated with each lexical entry, whether concrete or abstract is further fixed. Thus for any given set of lexical choices, the number of arguments for the structure is pre-set, whether these arguments come from a single lexical entry, or from two lexical entries which undergo incorporation.

I will not attempt to characterize here further the shift from a predominantly functional to a more lexical grammar. I would like to speculate, however, that it is general cognitive development that allows the child to accommodate a more idiosyncratic, less rule-governed system, world knowledge that need not cohere or be exceptionless, and that the rising significance of the substantive lexicon is part of this cognitive development.

## 6. Conclusion:

I have attempted to establish in this paper that there is a rather prolonged stage in the early grammar in which functional structure, and hence syntax, is (mostly) in place, but knowledge of lexical, substantive, entries is flawed. At that stage, children show a mastery of the positioning of DPs, but their knowledge of information which for adults resides in lexical entries is incomplete. Specifically, argument valency is not known, and more significantly, the fact that argument valency, for substantive items, may correspond to distinct entries, is not comprehended. The result is a non-discriminating use of one phonological representation, corresponding to a rough concept, in distinct event structures and for distinct argument valencies. At a slightly later stage, children do realize that valency is morphologically marked. However, at that point they mistake that marking for a functional one, therefore giving rise to considerable overgeneration. Only later than that, do they realize that valency is the property of substantive entries alone, converting their erstwhile functional morphemes into lexical ones.

If, indeed, the above description of the early grammar is at all on the right track, it follows directly not only that acquisition cannot progress from the comprehension of the lexical semantics of verbs, but also that the lexical semantics of verbs cannot possibly play a deterministic role in the projection of arguments. Syntactically, the picture that emerges is of a much impoverished lexicon, consisting of lexical entries which are barely more than a match between sign and meaning, while most aspects of their syntactic realization are

accomplished by the functional structure. If there is, indeed, a pre-functional stage in the development of grammar, it is in actuality a pre-syntactic stage altogether, as in the absence of functional structure, it is not clear that anything but naming may be accomplished.

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