The Rise of Predication by EPP

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1. Introduction.

Throughout this paper, I will apply to the 'Extended Projection Principle' (EPP) the notion 'acquisition'/'learning'. This may strike some people as a bit odd for the following reason. The standard EPP in generative grammar must be any grammatical arrangement that serves to guarantee that a predicate is "anchored", due to the presence of a subject (Chomsky 1981, 2001). The subject obligation for all, or most, predicates is a high-ranking candidate for of universal grammar (UG). As such, Chomsky's view on the matter implies that the EPP must be part of an innate a priori frame. The EPP will guide the child's acquisition program rather than being the outcome of such a program. The notion 'learning' does not apply to an a priori guidance system. The EPP, as UG principles in general, is not supposed to be something that the child will discover and learn when he is confronted with language specific facts. I am aware of the dominant philosophy, but the longitudinal analyses of Dutch and French child language show in my view something that is indisputable close to an acquisition of the EPP (cf. Platzack 2001).

I will argue that the EPP in child language appears in 4 acquisition steps. Section 2 will make a distinction between operator predicates and EPP predicates. The latter eventually supplants the former by introducing personal subject pronouns and dummy subjects. The condition on the order of acquisition steps is born out by the longitudinal graphs in section 3. It will be shown that ϕ -features on the subject and verbal agreement with the subject are the last acquired EPP properties. Section 4 observes that the speed of these two last steps in the acquisition of the EPP is much higher. The difference in speed will be explained by the notion 'evidence frame'.

2. Steps in the acquisition of the EPP

In general, the same UG device is mastered quickly in some grammatical systems and far more slowly in others. A good example of slow acquisition is the EPP in Dutch and French, both non-pro-drop languages. Longitudinal graphs from Dutch and French child language show that children realize this EPP in 4 successive steps.

- (1) a. Step 1: I-marking on the predicate and early EPP
 - b. Step 2: D-marking on the subject and free anaphors (pronouns/clitics)
 - c. Step 3: φ-oppositions on D° and dummy subjects
 - d. Step 4: AGR on I^o (the finite verb)

By I-marking, I mean the marking of a predicate by a factor <+I>. This factor generalizes over a variety of devices {copula, auxiliary, modal, finite morphology}.¹ By D-marking, I mean the marking of arguments by a factor <+D>. This factor also generalizes over a variety of devices {article, demonstrative, possessor, quantifier}.

The longitudinal graphs for I-marking and D-marking demonstrate how UG devices 'fade-in'. They are acquired over time. Their language-specific realization rises under pressure of input. Moreover, the basic grammatical devices appear in a certain predetermined order and with a certain predetermined speed. This is a kind of learning and the successive steps can be tracked down, as I will show now.

2.1 The early EPP

At first EPP satisfaction depends on bare <+fin> marking only. The EPP formula in (2) accounts for that situation.

(2) Early EPP
I°<+fin> marked predicate <==> (<+D> marked) subject in Spec, I°

The formulation for the early EPP contains the bracketed phrase: (<+D> marked). It abstracts away from the systematic D-marking of the subject. The reason is that systematic D-marking is not present yet (that is step 2). Neither are present the φ -features for person {first, second, third} and number {singular, plural} (step 3). These φ -features do not appear consistently in child language until the EPP is already manifest for some time. The formulation in (2) also disregards mentioning any morphological agreement between I-marking on the predicate and D-marking on the subject (step 4). This has the same reason. Such phenomena as φ -features and agreement in person and number come in afterwards due to the early EPP, rather than the other way around. At least, in French and Dutch child language, which I will consider here.

Since the presence of the EPP is dependent on the acquisition of highly language specific marking, summarized as <+fin>, it would be hard to deny that the

^{1.} This means that any account of the <-fin> utterances in child language should include not only verbal predicates, so-called Optional 'Infinitives', but also, and crucially, non-verbal predicates 'daddy *nice*', 'bear *in (the) zoo*'. See Van Kampen (1997) for this generalization.

EPP is acquired. Once the acquisition of the EPP is recognized as an acquisition step, one can see how the EPP supports subsequent steps. If it had been present all along, the factual order of learning steps remains unexplained.

By taking a narrow orientation towards the overt facts in child language I come to disagree with the interpretation of others. For example, Hoekstra & Hyams (1998) have argued that the disappearance of root infinitives in non-pro-drop languages like Dutch and French is due to the perception of a feature <number> that is shared by the predicate, say I°<+fin>, and the subject, say <+D°>. This unifying perception would enable the learner to see both markings, the <+I, number> marking of the predicate and the <+D, number> marking of the subject as part of the same and obligatory "anchoring" device for utterances <+I, tense>. The acquisition of the number-agreement chain would guarantee simultaneity of subject-obligation, D-marking on the subject, I/tense-marking on the verb and the dismissal of root infinitives. Hoekstra & Hyams (1998) give a quantification to support the thesis that D-marking and I-marking appear simultaneously in non-pro-drop languages.² A critical note in Van Kampen (2001: 5.3) rejects the validity of that quantification.

In order to clarify my own dissenting view, I will show how the acquisition of the EPP in 4 steps largely disregards <number>, but is supported by longitudinal graphs. The 4-step analysis underlines at the same time my point that UG-properties are mastered by an input-controlled procedure that is clearly responsive to all kinds of language specific circumstances.

2.2 Early EPP and mode-implied subjects

According to the formulation of the early EPP in (2), the acquisition of I-marked predication coincides with the presence of an explicit subject. As is well known from the literature, there are also early I-markings that lack an explicit subject. I have argued (Van Kampen 1997, 2001, to appear) that these constitute a specific group of predicate operators with a mode-implied subject.

(3) a. Inflection-marked predicate ⇒ explicit subject b. Operator-marked predicate ⇒ mode-implied subject

The explicit subjects, (3)a, are the regular EPP case in adult language, but early child language is also characterized by the presence of mode-implied subjects, (3)b. I will add examples of the mode-implied subjects and subsequently define their properties.

^{2.} Hoekstra & Hyams (1998) admit the occurrence of <-D>-marked subjects in I<+fin> utterances in child language. They assume that the finite verb is 3rd person singular by default and that it takes a subject that matches its features, i.e. 3rd person singular. In their perspective, number specification probably does not mean an opposition <singular/plural>.

It is an underlying idea of the formulation in (2) that there are 'quasi I-marked' verbs. These lack an explicit subject and they only occur with certain verbs that function as predicate operators. These predicate operators pragmatically imply the presence of a specific person. For example, *wanna* is inherently 1st person, just like *veux* in French child language or *kwi* in Dutch child language.³ The modes for the predicate operators are listed in (4).

(4) Modes in early child language (Van Kampen 1997)

a.	wish/ability of the child	$intentional\ mode$	(for 1st p.)
b.	command by the child	imperative mode	(for 2nd p.)
c.	decision about naming/characterizing	constative mode	(for 3rd p.)

The predicate operator doesn't have a syntactically expressed subject. Neither does it allow the lexical variations that a regular content verb admits to. Due to their lexically fixed form, one may identify the apparently subject-less utterances as marked by situation-bound predicate operators. See some examples in Dutch child language (Van Kampen 1997, 2001, 2003b, to appear; see also Jordens 2002).

(5) <u>Dutch Sarah</u>: predicate operators with fixed mode-implied subjects

kwi voge	(I) wanna bird	1;9.10 / 93 weeks
kan liedje niet	(I) can song not	2;0.17 /107 weeks
hoefe niet in bad	(I) need-not in bath	2;0.17 /107 weeks
mag wel kleure(n)?	(I) may-indeed color	2;2.18 /116 weeks
doe oge(n) dich(t)	(you) do eyes close /imp.	1;10.13 /97 weeks
is beer	(that) is bear	often
moet zo	(that) must so	2;1.10/110 weeks
	kan liedje niet hoefe niet in bad mag wel kleure(n)? doe oge(n) dich(t) is beer	kan liedje niet(I) can song nothoefe niet in bad(I) need-not in bathmag wel kleure(n)?(I) may-indeed colordoe oge(n) dich(t)(you) do eyes close /imp.is beer(that) is bear

The same phenomenon can also be seen in child French, see (6).

(6) <u>French Grégoire</u>: predicate operators with fixed mode-implied subjects

a.	veux descendre	(I) wanna go down	1;9.18 / 89 weeks
	sais pas (also adult French)	(I) don't know	often
	vais assis sur la chaise	(I) go sit on the chair	2;1.25/ 112 weeks
b.	mets dedans	(you) put therein/imp.	1;11.22/98 weeks
c.	est ours	(that) is (a) bear	often

^{3.} The present analyses of 'mode-implied' subjects has an empirical consequence. Except for the constative mode, 3rd person 'drop' will not occur in languages that do not have topics/topic-drop, like English and French (see Van Kampen 1997, to appear).

The properties of the modes are listed in (7).

- (7) *Properties of the modes.* Modes are
 - a. fixed for person { 1st, 2nd, 3rd }
 - b. lexically fixed for standard verbs
 - c. situation-bound

Unlike the EPP subjects, the mode-implied subject cannot vary in person, once the verbal operator is chosen. They are lexically fixed for standard verbs. One may speak of fixed operators with 'mode-implied' subjects, because the <+finite> forms in these constructions are lexically restricted and highly frequent. They express major pragmatic oppositions in standard situations and they are gesture sustainable in a standard manner.

Previous descriptions of these child language constructions have argued two different points. Firstly, 'null subjects' would be supplied a priori by grammatical intuition (Sano & Hyams 1994, among others) and secondly, the overuse of null subjects in early child language would be due to discourse effects (Rizzi 1994, among others). My evidence from longitudinal graphs points in the opposite direction. There is no systematic quantitative evidence for null subjects in early child language, if we filter out predicate operators. There is no access to discourse before step 2, that is before the introduction of D-marking (Van Kampen 1997, to appear).

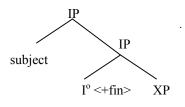
- (8) Early child language
 - a. No null subjects, if predicate operators are filtered out
 - b. No access to discourse before D-marking

The operator construction and its mode-implied subject disappears from child language. This takes place as soon as step 1 and 2, systematic I-marking and D-marking, have been taken. That point marks the end of early child language. The <+/- person> pronouns (1st/2nd/3rd person and dummy subjects) start to appear in the adult fashion. That is, they appear with all verbs and in all argument positions. EPP predication takes over. As soon as the EPP reinterprets the operator in (9)a as a <+fin> verb, the absent or cliticized subject pronouns are reinterpreted and articulated as Spec,I pronouns, see (9)b.

(9) a. Operator predication

assertion XP refusal wish operator etc..

b. EPP predication



This reinterpretation suggests that oppositions of number or person play no crucial part in the definition of the EPP. This tallies well with the major facts in this paper, namely 1) explicit D-marking follows I-marking; 2) person/number oppositions do not appear before the final phase of D-marking. To my mind personal pronouns, dummy subjects and verbal agreement are not learnable before EPP and D-marking have been established.

3. The 4 EPP steps in Dutch and French

I will present here the longitudinal development of a Dutch child, Sarah, and a French child, Grégoire. The acquisition of the full-fledged EPP in Dutch and French shows indeed the 4 successive steps in (1), repeated in (10).

(10) a. Step 1: I-marking and early EPP

b. Step 2: D-marking and free anaphors (pronouns/clitics)

c. Step 3: φ-oppositions on D° and dummy subjects

d. Step 4: AGR on I^o (the finite verb)

Initially, the EPP appears without tense and without φ -features on D and I, see (11).

(11)a. <+fin>, no <+tense> → since there is no <+/-past> opposition yet
b. <+D>, no <+number> → since there is no <+/-plural> opposition yet

c. <+D>, no $<+person> \rightarrow$ since there is no <1/2/3 person> opposition yet

The I-marked form is <+finite> only and opposes to the infinitive and participles. It is not yet marked for <+tense>, since there is not an opposition past/present yet. Nor is the early <+finite> form in non-pro-drop languages marked for number or person oppositions. The subject is not yet a grammatical singular, since there is no opposition to a plural. The subject is not yet a grammatical 3rd person, since there is no systematic opposition to 1st and 2nd person. A longitudinal analysis in section 3.3

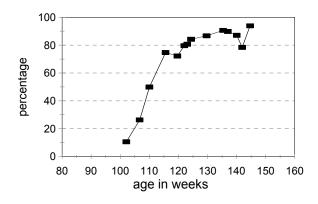
will show that 1st, 2nd and 3rd personal pronouns do not appear with some consistency until after the I-marking on the predicate and the early EPP have been established.

My main point is a reduction of child language by means of De Saussure's "Il n'y a rien que des oppositions". I propose, contra Full Competence, that empty categories or implied features are no tools in early child language. They exist only as final parts of a full paradigm. And it is the explicit paradigm that has to be acquired first. The full paradigm cannot be present in early child language by means of some innate UG, since full paradigms are language specific. As soon as one sees this, the child's ordering of acquisition in 4 steps begins to make sense. UG devices, like the EPP, are discovered and learned in a stepwise fashion. They appear as parts of a paradigm and they are acquired under the pressure of language specific input.

3.1 First step: I-marking and early EPP

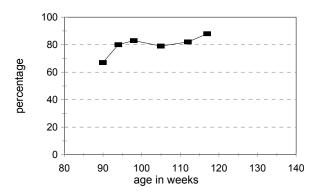
Dutch and French clauses are to be headed by a finite verb. A count of the utterances marked by a finite verb in longitudinal files of mother-child conversations show the rising percentage of I-marking. This rising percentage can be translated into longitudinal graphs (Van Kampen 1997, 2003c). The graphs in (12)/(13) measure the rising percentages of verbal and non-verbal predicates marked by <+fin> in the corpora of Sarah and Grégoire. I take it that the child has acquired systematic marking if she realizes > 80% of the adult norm.

(12) Dutch Sarah: Acquisition of I-marking



^{4.} I take 10% within the adult norm as the point of acquisition. Since not all all sentences are I-marked in the target language, and not all nouns are D-marked in obligatory contexts, I assume that the child that crosses the 80% line is within 10% of the adult norm.

(13) French Grégoire: Acquisition of I-marking



The graphs in (12) and (13) not only establish the rise of I-marking, but also the obligatory presence of the explicit subject, defined here as 'early EPP'. The rise of I-marking coincides globally with the rise of lexical subjects (see longitudinal graphs by Haegeman 1996 for Dutch and De Cat 2002 for French). Since D-marking has not been acquired yet, the subject is still lacking D-marking most of the time. The subject argument in Dutch is realized at first in situation-bound contexts by a proper or a quasi proper name, or by a demonstrative, see Van Kampen (to appear).

- (14) The 'early EPP' subject
 - a. is not marked for reference yet (it is not D-marked)
 - b. therefore it is situation-bound: a quasi proper name or demonstrative

One may say that I-marking coincides with the early EPP as defined in (2). The appearance of the I-marked predicate coincides with the appearance of the subject in the Specifier position, but one should abstract away from D-marking on nouns. We will see now that D-marking is the subsequent step.

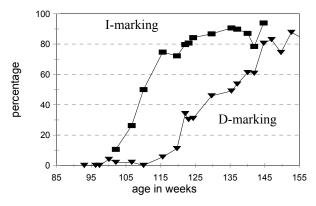
3.2 I-marking precedes D-marking

NPs in adult Dutch and French are to be marked by an article or some other Delement. Again, it is possible to get the percentage of D-marked NPs, and again we

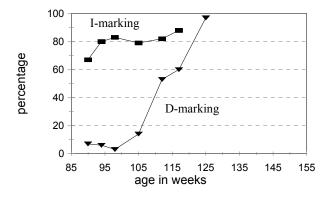
^{5.} In French, the use of a D° is obligatory. In Dutch, the use of a D° is obligatory with singular count and definite plural nouns. Dutch makes use of zero signs for mass, proper and indefinite plural nouns. The difference between French and Dutch may affect starting point and speed of the acquisition graph, but that is irrelevant for the present argumentation.

get a rising percentage in Dutch as well as in French. The longitudinal graphs for D-marking in (15) and (16) measure the percentages of NPs that are marked by a determiner in the files of Sarah and Grégoire. In both cases, we can see how the D-graph does not start its rise before the I-graph has crossed the 80% acquisition line.

(15) Dutch Sarah: Acquisition of I-marking and D-marking



(16) French Grégoire: Acquisition of I-marking and D-marking



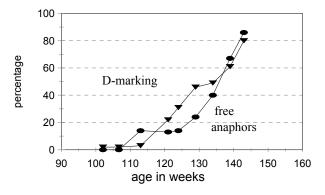
Sarah acquired I-marking at week 120 and D-marking at week 145. Grégoire acquired I-marking at week 94 and D-marking at week 125. Grégoire's I-marking is almost instantaneous (>80% at 1;10.20). The appropriate placement of the finite verb in V-second Dutch is a more intricate affair than the acquisition of the finite verb in SVO French. See Evers & Van Kampen (2001) for an extensive quantified analysis.

The fact that I-marking appears before D-marking in both Dutch and French hides a deep problem. D-marking has a higher frequency in the input than I-marking. Yet, children in various languages start to analyze predicate-argument structure by I-marking. I would not know how to instruct a Language Acquisition Procedure such that it will do just that. Nor is the acquisition order anticipated by any present syntactic theory, as far as I can see. So, I must leave it as a problem.

3.3 Second step: D-marking and free anaphors

The acquisition of D-marking on nouns coincides with the acquisition of free anaphors in Dutch. By free anaphors I mean full, weak or clitic pronouns (as opposed to bound reflexives). See the graphs for Sarah in (17). By contrast, free anaphors in French come in after the acquisition of D-marking, as will be shown for Grégoire below. This must be due to the clitic status of free anaphors in French. See Jakubowicz & Nash (2002) for the claim that this holds for object clitics and Van Kampen (to appear) for the claim that this holds as well for subject clitics in as far as these are not 'shadow' (resumptive) pronouns. To establish Sarah's use of the free anaphors in (17), the ratio DP<+pro> / DP<+/pro> for Sarah is measured against the ratio for her adult conversation partner (the mother).

(17) Dutch Sarah: Acquisition of D-marking and free anaphors

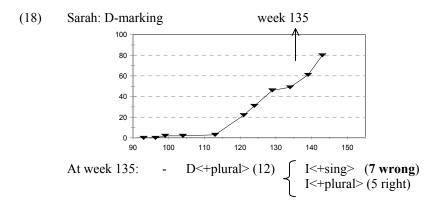


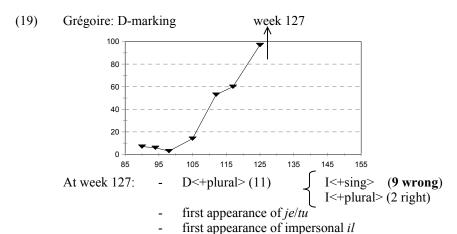
It has been observed by Postal (1966) that the definite marking of NPs is parallel to the use of free anaphors, in form as well as in identifying function. Postal's point of view is confirmed by the graphs for the acquisition of D-marking of nouns and free anaphors. The two graphs show a common rise for Dutch Sarah. This constitutes a striking support for the claim that D-marking is a matter of argument identification rather than some <+Noun>-extension. Williams (1994) argues that there is a close

relation between the grammatical theta/case marking of arguments and deictic signs for referentiality. We may look at the D-graphs as the child's getting the point of Williams (1994). D-marking appears to be a matter of argument marking indeed. The arguments can be represented by <+D> pronouns or by <+D>-marked NPs.

3.4 Third step: φ-oppositions on subject and dummy subjects

It is only after the acquisition of D-marking of arguments that <+plural> (<number>) marking appears on the subject. However, the plural subjects do not immediately give rise to <+plural> specification on the finite verb, see (18) and (19).





first appearance of clitic free anaphors

French Grégoire did not use with consistency the <+person> pronouns *je* and *tu* and the <-person> pronoun for dummy subjects before week 127, see also the figures in Hamann and al. (1996: table 4). 1st and 2nd person were at first taken care of by the subject implying modes. The systematic use of the Dutch dummy subject is late too. It is a step 3 affaire, as it is in French. The Dutch personal pronouns, by contrast, come earlier. They do not force, like the French, a choice between clitic or emphatic, and they appear for Sarah during step 2 (for details, see Van Kampen to appear).

The personal pronouns in French imply the acquisition of a different construction in addition to the pronominalization, because they are clitics. Let me elaborate this point. The position of full-sized arguments establishes Baker's UTAH (Theta Assignment Hypothesis, Baker 1988:46f). The UTAH holds that theta roles select a linearly fixed X-bar configuration for the theta-assigning verb and its theta-carrying argument. The UTAH offers an evidence frame for the subsequent acquisition of clitic arguments in French. This plausibly causes the acquisition difference between the French clitic and non-clitic constituents. It explains as well that the Dutch non-clitic anaphors are part of step 2 (D-marking), whereas the French clitic pronouns follow step 2 (D-marking and UTAH).

3.4 Fourth step: Agreement between subject and finite verb

Sarah's finite verbs start showing the correct agreement with the plural subject only 5 weeks after the acquisition of ϕ -oppositions on the D-marked subject, as may be seen from the figures in (20) (see also Blom 2003). Grégoire's recordings stop two weeks after step 3. So, the evidence is a bit meager. But at this last recording, Grégoire had 4 distinguishable plural subjects of which only 1 did not show correct agreement on the finite verb.

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(20) a. Sarah, week 140-142: D<+plural (13) → I<+plural> (13 right)
b. Grégoire, week 129: D<+plural (4) → I<+plural> (3 right)
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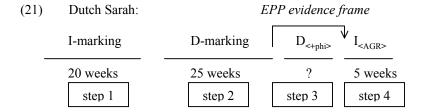
	Sarah	Grégoire
D <number></number>	week 135	week 127
I <number></number>	week 140	week 129?

The φ-feature agreement between subject and predicate is the last phenomenon to appear. Moreover it appears with mistakes. It is only at the end of the D-graph that Sarah's finite verbs show the correct agreement with the plural subject. It seems likely that agreement is acquired due to the EPP rather than the other way around. The more problematic agreement with indefinite subjects and a dummy element in Spec,I are at first not relevant in early child language.

4. Speed of acquisition and evidence frames

The acquisition of the full-fledged EPP shows the same 4 successive steps for Dutch Sarah and French Grégoire. Both Sarah and Grégoire apply systematic I-marking almost half a year earlier than systematic D-marking. And both acquire φ-oppositions on the subject before the finite verb starts showing correct agreement.

The succession of the acquisition steps also shows the same relative speed. Sarah's and Grégoire's steps 3 and 4 have roughly a 5-fold higher speed than their steps 1 and 2, see (21) for Sarah.



The 5-fold higher speed of steps 3 and 4 can be made plausible. I propose that after step 1 and step 2, the EPP operates as an evidence frame. The input has not been lacking in ϕ -features on I and D, rather the ϕ -features could not become part of the intake before I and D had been established. It is only after the acquisition of I-marking and D-marking that the EPP begins to function as an evidence frame, a preceding structure that is needed to spot the relevant points. It appears that evidence frames outweigh mere input frequency.

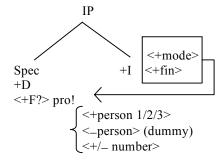
4.1 The EPP as evidence frame

The EPP as evidence for the Spec-head frame has a major effect on the speed of steps 3-4. My point is that this effect does not take place until the EPP is acquired.

The very reinterpretation of the predicate operators (for modes like {intention, assertion, wish, refusal}) as <+fin> verbs triggered the EPP frame. The co-occurrence of I-marking and the obligatory presence of a D-marked subject in the Specifier position, did already establish the EPP as a case of Spec-head relation. By consequence, the presence of a <+fin> operator raises the expectation of a Spec,I and opens the way to figure out the ϕ -feature content in D° and in a subsequent step in I° .

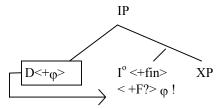
The first effect of the EPP as evidence frame is the specification of φ -features on the subject D<+pro?>. The evidence for the unidentified φ -features in Spec, I applies to the left, from head I° to the Spec, I, see (22)

(22) EPP as evidence frame to the left



The second effect of the EPP as an evidence frame is that it guides the learner towards the φ -agreement on the finite verb I° , see (23). AGR on I° follows from φ -oppositions on the subject and it follows the acquisition of systematic D-marking.

(23) EPP as evidence frame to the right



The <+F?> stands for an as yet unidentified marking on I°.

The $<_{\mathbb{O}}$!> stands for the eureka learning point.

The longitudinal picture shows an important consequence of the EPP as an evidence frame. Impersonal subjects in non-pro-drop languages follow the EPP and its systematic I-marking and D-marking. Impersonal subjects appear fairly late and simultaneously with the full use of personal pronouns. The present longitudinal analysis opposes to Hyams (1986) claim that empty subjects are a starting point and that dummy subjects guide the child towards the EPP acquisition as <+/- pro-drop>.

Conclusion

I-marking precedes D-marking and D-marking precedes the appearance of plural marking. The EPP, finally, is well-established before the appearance of any such ϕ -features as <person> and <number> on the finite verb in non-pro-drop languages. This leads up to a challenge of minimalist thinking about the EPP. The EPP is well-established before the appearance of uninterpretable ϕ -features on the V<+fin>. Why or when should these features develop into a major mechanism ever? There can be no doubt though that the EPP is learned as part of a Spec-head relation.

The picture of I-marking/EPP and D-marking/UTAH in child language runs fine without imposing any uninterpretability trigger. D-marking and I-marking are both deictic operator devices and they are interpretable quite well. They 'singularize' semantic content elements as events, respectively things. The <+fin> marker has been acquired before the introduction of a tense opposition. It is no more than an utterance operator at first (Van Kampen 2001, 2003b, to appear). The <+fin> marker signals in early child language that the predicate is 'anchored', that is singularized and applicable to some saliency aspect of the situation. This includes a reference to the subject argument in a fixed <subject>-<+fin> configuration. The D-marking is

deictic as well. It singularizes θ -carrying arguments, but it does so well before the introduction of a singular/plural opposition.

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