The learnability of A-bar chains[1]

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1. Introduction

The study of general grammatical principles is hardly concerned with progress in the study of language acquisition. Yet, child language is the area where limited data already reveal the general principles of grammar. For example, data from the acquisition of A-bar chains (Van Kampen 1997, 2004, 2007) may support the claims about locality in (1).

(1) Grammar is acquired from the most local patterns possible and the final result preserves much of that locality.
   a. All movement, e.g. wh-movement, is learned in a short step first. Long-distance movements follow from short steps and a fortuitous overlap of initial localities.
   b. Islands need not be learned. They follow from the fortuitous non-overlap of such localities.

The data that will support the claims in (1) are given in (2). The sentences in (2) are long wh-questions in child Dutch with an intermediate pronoun, a *w*-pronoun in (2)a and a *d*-pronoun in (2)b.

(2)   a. welke jongen denk je   *wie*<+animate>   daar loopt?
         which boy   think you who   there walks?
         (which boy do you think is walking over there?)
    b. welke jongen denk je   *die*<+gender> ik leuk vind?
         which boy   think you that   I nice find?
         (which boy do you think I like?)

Long wh-questions with an intermediate pronoun appear in the acquisition of various languages (Thornton 1990 for English, Van Kampen 1997 for Dutch, Strik 2006 for French, Gutiérrez 2006 for Basque and Spanish). Although the type with intermediate pronoun is attested in the adult speech for a number of adult languages (see references in Van Kampen 1997:143), it does not do so in the adult speech of any of the languages just mentioned. Just for that reason, it is remarkable in (2) that child Dutch varies the intermediate pronoun as *die*/*wie*, whereas adult standard Dutch has no intermediate pronoun and only fits in the neutral complementizer *dat*. The long wh-question type in (3) with neutral complementizer was the only maternal input for the children considered here.

(3)   welke jongen denk je   *dat*   Sarah leuk vindt?
    which boy   think you that   Sarah nice find?
    (which boy do you think Sarah likes?)

Hence, we have here the paradoxical fact that child language introduces spontaneously a variation not present in the adult input.

An important circumstance regarding the intermediate pronouns in (2) is that the acquisition of long wh-questions in child Dutch follows the earlier acquisition of relative

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pronouns. Relative pronouns show an agreement pattern with an antecedent. The relative paradigm in Dutch is quite irregular. These irregularities reappear on the intermediate pronoun paradigm. This suggests that the intermediate pronoun is to be analyzed as an "A-bar pronoun" spelled out under local agreement with the moved wh-phrase (Van Kampen 1997: chap.6, cf. Thornton 1990, Crain and Thornton 1994). The variation of the intermediate pronoun in child Dutch (*wat*, *wie*, *waar*, *welk*, *die*, (*dat*)) follows the relative agreement paradigm and can be explained from that perspective. Below I will first give a description of the paradigm for A-bar pronouns in Dutch.

1.1 A-bar pronouns

Following Postal (1966), I will label all pronouns as referential indicators <+D>. A-bar pronouns are pronouns that must end up in a sentence-initial CP position (Van Kampen 1997: 92ff).[2] They represent pronominal categories with the additional feature <+C>.[3] The best examples of inherently A-bar pronouns are *w*-pronouns in root questions and relative pronouns. The V2nd languages have in addition an A-bar pronoun used as a topic in root sentences, the *d*-pronoun, see (4).

(4)   ze zag daar een jongen.   *Die* (= de jongen) vond   ze wel leuk
        she saw there a boy.   That (= the boy)   found she rather nice
        (she saw a boy over there. She thought he was rather nice)

The entire paradigm of <+C> question pronouns in Dutch is <+wh> (*wat*, *wie*, *waar*) and that of <+C> topic pronouns is <−wh> (*dat*, *die*, *daar*), see the list in (5).

(5)   A-bar pronouns in Dutch root sentences

		referent	structural case	oblique case
d-set	<+gender>	*die*	----
	<−gender>	*dat*	([*daar*] …(P))
w-set	<+animate>	*wie*	[P *wie*]
	<−animate>	*wat*	[*waar*] …(P)

Agreement is controlled by the <±gender> and <±animate> properties of the referent.[4] The topic *d*-pronouns have an antecedent and they are sensitive to phi-features <±gender> of that antecedent. In Dutch, singular nouns can be <+gender> or <−gender>. This feature determines the choice of the definite article, either *de vrouw* <+gender> ('the woman') or *het huis* <−gender> ('the house').[5] The plural definite nouns are always *de* (*de vrouwen*, *de*

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[2] I abstract away from Rizzi's (1997) cartographic approach of the left periphery, which is of no immediate relevance for the discussion.

[3] If one allows the category feature <+C> to appear in the lexicon as an option for certain pronouns, one may handle for example *wat* as <+D, ±C>. The *w*-pronoun *wat* may then appear as indefinite pronoun in <−C> argument positions, see (i). As an indefinite argument *wat* cannot rise into the subject position, and remains in situ as in (i). See Postma (1994) (cf. also Cheng 2001).
     (i) a. als (er)   hem *wat*   {lukt/bevalt/hindert/tegenzit}
              if   (there) him something   {succeeds/pleases/bothers/goes against}
              (if he succeeds in something, etc..)
          b. er is wel   *wat*   in de keuken
              there is indeed   something   in the kitchen
              (presumably there is something in the kitchen)

[4] I take here <±animate> as the relevant feature for <±human-like>.

[5] For the binary representation of gender values for nouns in Dutch see Rooryck (2003). Rooryck takes gender to be a univalent feature (cf. Van Kampen 2007), but that is not immediately relevant for the present overview.

huizen).[6] Slightly different from the traditional descriptions, I consider number as adding the feature <+gender>/*de*. The oblique pronoun *daar* is not sensitive to gender. The question *w*-pronouns have no syntactic antecedent, but they indicate nevertheless whether the answer must be <±animate>. The paradigm of the relative pronouns in Dutch is a fixed, but irregular mixture of the forms present in the question *w*-paradigm and the topic *d*-paradigm. The *d*-option for relative pronouns is probably present in V2nd languages only (Van Kampen 2007).

A-bar pronouns are also related to an argument position. The A-bar pronouns in Dutch express structural versus oblique properties. This <±oblique> feature is clearly not related to the antecedent, but to the A(rgument)-position, see the examples in (6). Note that *kast* ('cupboard') is a <+gender> *de*-noun.

(6) a. op welke kast<+oblique> *die*<+gender> jij hebt t_d gekocht ligt al dat stof?
      on which cupboard that you have t_d bought lies all that dust?
   b. de kast<+gender> *waar*<+oblique> al dat stof op t_{wh} ligt heb jij gekocht
      the cupboard where all that dust on t_{wh} lies have you bought

The general properties of A-bar pronouns are now given in (7).

(7) *Properties of A-bar pronouns*
   a. are characterized by <+D>, <+C> and <± wh>.
   b. express phi-features for <±gender> (*d*-pronouns) and <±animate> (*w*-pronouns) of the antecedent/referent.
   c. express the <±oblique case> of the argument position.

The intermediate pronouns in long distance questions are A-bar pronouns as well. They have the characteristics in (8).

(8) a. Their position is a sentence-initial <+C> position.
   b. Their form is partly taken from the root *w*-pronouns <+C, +wh>, and partly from the root *d*-pronouns <+C, −wh> in languages that have them.

Since the intermediate pronouns show the same variation between *w*-options and *d*-options as the relative pronouns, the *d*-option for intermediate pronouns is probably restricted to V2nd languages as well.[7]

1.2 Organization of the paper
The paper below is organized as follows. Section 2 ('Morphological preliminaries: The relative pronoun paradigm') recapitulates Van Kampen (2007) and exemplifies the irregular variation in the relative paradigm.
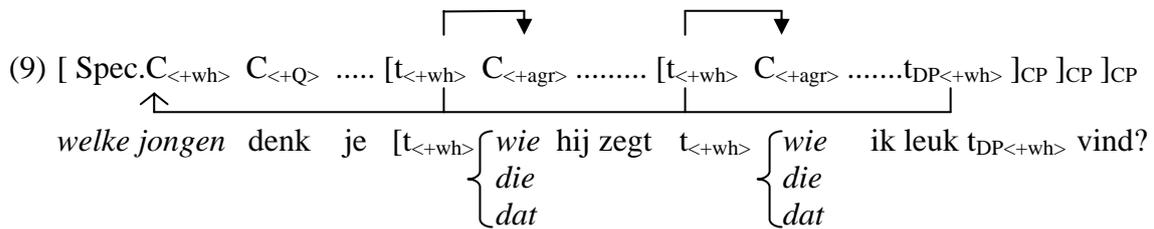
Section 3 ('Syntactic preliminaries') settles certain syntactic issues, the acquisition of Ross' (1967) Left Branch Condition in Dutch/German but not in Polish, and the simultaneous acquisition of obligatory pied-piping.

Section 4 ('A-bar pronouns from Spec-head agreement') offers the empirical core of the paper. The extended A-bar chain of a wh-phrase first appears in Dutch child language as a

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[6] The indefinite article is always *een* (*vrouw/huis*) irrespective of the gender of the noun. The indefinite plurals have the article ∅ (*vrouwen/huizen*), again irrespective of gender.
[7] I assume that the English element *that* in *the man that she looked at* is a (relative) constant (traditionally called 'complementizer') rather than a (relative) pronoun. The same holds for the intermediate *that* in *who do you think that I like?* It may be argued that the 'complementizer' diachronically derives from the most unmarked *d*-pronoun. See Allen (1980) for (relative) *d*-pronouns in old, V2nd, English.

chain with the full wh-phrase in sentence-initial scope-position and corresponding *w*-set and *d*-set A-bar pronouns in all intermediate positions. See the structure diagram in (9) and the examples in (10).

(9) [Spec.$C_{<+wh>}$ $C_{<+Q>}$ ..... [$t_{<+wh>}$ $C_{<+agr>}$ .... [$t_{<+wh>}$ $C_{<+agr>}$ ....$t_{DP<+wh>}$]$_{CP}$]$_{CP}$]$_{CP}$

welke jongen denk je [$t_{<+wh>}$ { *wie* hij zegt $t_{<+wh>}$ { *wie* ik leuk $t_{DP<+wh>}$ vind?
  die   *die*
  dat   *dat*

(which boy do you think he says I like?)

(10) a. [welke jongen]   denk je   *wie*   daar loopt?   (Laura 8;3.8)
          which boy   think you who   there walks?
          (which boy do you think is walking over there?)
      b. [wie] denk je *wie*   er   in de auto rijdt?   (Laura 8;3.8)
          who   think you who   there in the car drives?
          (who do you think drives the car?)
      c. [in welk huis]   denk je   *waar* jij woont?   (Sarah 4;10.20/
          in which house   think you where you live?   Laura 7;7.10)
          (in which house do you think that you live?)

The intermediate A-bar pronouns in C^o can be derived by the already acquired rule for relative agreement. This leads to an obvious point and a curious prediction. The obvious point is that the intermediate C^o content is not selected by the matrix verb. It follows from antecedent agreement, not from selection by a matrix verb. The curious prediction runs this way. The irregularities of relative agreement reappear in the intermediate pronouns. This prediction is correct and far from trivial. The Dutch A-bar paradigm for relatives is an intricate mixture of *d*-pronouns and *w*-pronouns (Van Kampen 2007). Significantly, that system has been firmly acquired a year before the chains with intermediate pronouns appear. The evidence that it is the same system that gets active is as striking as the relative paradigm is irregular in Dutch. At the same time, the support for a multiple short step analysis of long wh-movement could not be better, since the options that the relative paradigm allows are open at each intermediate point: (*welke jongen* …. C^o *dat* …. C^o *die* ….C^o *wie*), but it is not present in the adult input. In order to acquire the adult system, the child only needs to suppress the spell-out of the agreement and use a complementizer instead, cf. (3). In this view, the top of the chain must remain the most specified element, since it is the antecedent in all intermediate moves. Let me add that, in the corpora considered, this spell-out of the intermediate C^o, although attested in Dutch dialects (Barbiers, Koeneman and Lekakou 2007), was non-existent in the maternal input, but absolutely dominant and quite long-lasting in the language of the child. This may explain why the type in (9)/(10) pops up at the internet, especially at teenager chat-sites.

Section 5 ('Partial movement') agrees with Fanselow and Mahajan (1996) that German 'partial movement' constructions do not arise from long-distance movement. These constructions are (marginally) attested in Dutch child language as well, see (11).

(11) *wat*$_j$ denk je $t_{<wh>j}$ *wat*$_i$ ik $t_{<+wh>i}$ *voor liedje* zing?   (Sarah 5;5.12)
      what   think you   what I   for song   sing?)
      (what kind of song do you think that I sing?)
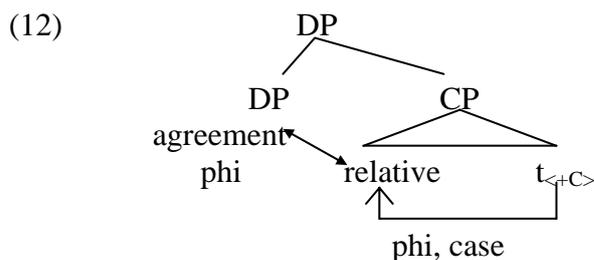
There are in the Fanselow and Mahajan view two chains in example (11). The *wat* element of the j-chain is an expletive pronoun for the subordinate CP. My analysis here follows Fanselow and Mahajan (1996), but I will in addition assume that due to the expletive element, the subordinate CP will be an adjunct of the matrix construction rather than a complement. The matrix expletive is not seen as a reduced form of the complement wh-phrase.

Section 6 will offer the learnability perspective. It will be shown that locality is a crucial and inevitable ingredient for the learnability of long-distance relations. The necessity of 'learning from local steps' is supported by the acquisition data. Since the child's acquisition steps show the locality in overt syntax, successive cyclic movement is the best hypothesis for the observed data.

The final section 7 will state the general conclusions and consider how the study of child language analyzes the learnability of grammatical patterns and why that gives further substance to the broad common sense assertion that grammatical principles must somehow reflect a "psychological reality".

2. Morphological preliminaries: The relative pronoun paradigm

Relative pronouns are A-bar pronouns that agree in phi-features with the antecedent. The relative pronoun is an A-bar pronoun that relates to the case properties (<±oblique>) of the argument gap $t_{<+C>}$ and to the phi-features of the DP that is the sister of its CP-projection, see (12) (cf. section 1.1).[8]

(12)

The pronominal paradigm of the relative in Dutch is a mixture of *d*-pronouns and *w*-pronouns. If it is possible to express gender agreement with the antecedent, the *d*-pronoun is selected as in (13). Note that the oblique *daar* is not sensitive to gender (cf. section 1.1) and by consequence *daar* is not selected as a relative.

(13)   Dutch relative pronouns with <±gender> agreement. The *d*-set comes in: *die*, *dat*, **daar*

	structural case	oblique case
<+gender>	*die*	----
<−gender>	*dat*	**[daar]* …(P)

a. de jongen *die*<+gender> ik leuk vind
    the boy that I like
b. het huis/het meisje *dat*<−gender> ik leuk vind
    the house that I like
c. *in het huis *daar*<+oblique> ik woon
    the house where I live (in)

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[8] I assume the standard analysis of relative clauses as part of a complex DP

If it is not possible to express gender agreement, the *w*-pronoun, sensitive to <±animate>, is selected as in (14). This includes 'fused' relatives when there is no antecedent, (14)a,b. In contrast to the question *w*-pronoun, cf. (5), the oblique pronoun *waar* can be used with <±animate> antecedents, (14)c,d. Parallel to the question *w*-pronoun, see (5), only pronouns that are marked for <+animate> (i.e. *wie*) can realize [P pronoun] (14)e.

(14)   Dutch relative pronouns with <±gender> agreement blocked due to the absence of the antecedent or due to <+oblique>. The *w*-set takes over: *wie*, *wat*, *waar*

	structural case	oblique case
<+animate>	*wie*	[*waar*]….P [P *wie*]
<−animate>	*wat*	[*waar*] …(P)

   a. wie<+animate> ik leuk vind, is het hoofd van de school
       (who I like, is the head of the school)
   b. wat<−animate> ik leuk vind is die bank
       (what I like, is that couch)
   c. in het huis *waar*<+oblique> ik woon
       (in the house where I live)
   d. het huis/de jongen *waar*<+oblique> ik verliefd *op* ben
       (the house/the boy with whom I am in love)
   e. de jongen *op wie*<+animate> ik verliefd ben
       (the boy with whom I am in love)

There are two major exceptions to the generalizations of the selection in (13)-(14). First, (15) shows that the pronoun *die* may be used as <+animate> in relative agreement, although gender agreement (*dat*, cf. (13)b) might have been possible. This parallels with the tendency in spoken Dutch to extend *die* to <−gender> antecedents that are semantically specified for <+animate>, see (16). In that case, semantic animacy overrules grammatical gender, which is not perceived by the speaker.

(15)   het meisje<−gender>/<+animate> *die*<+animate>   ik leuk vind
        the girl   that   I   nice find
        (the girl that I like)

(16)   neem nou het buurmeisje<−gender>/<+animate>. *Die*<+animate> vind ik leuk
        take now the neighbors-girl.   That   find I nice
        (take the girl of the neighbors. I like her)

Second, (17) shows that the pronoun *wat* may be used as with <−gender> antecedents in relative agreement. This selection of *wat* is preferred in spoken Dutch over the selection of *dat* in (13)b.

(17)   het huis/het meisje *wat*<−gender> ik leuk vind
        the house/the girl what I like

Both irregularities are analyzed and explained in Van Kampen (2007) as the outcome of a selection problem related to the order of acquisition steps. The acquisition of gender is too slow to suppress the <+animate> agreements of the *w*-system.

The scheme in (18) summarizes the variation in the relative paradigm. The set in (18) covers all observations made in the standard grammar ANS (Algemene Nederlandse Spraakkunst 1997). The irregularity of the relative paradigm is here only stated and exemplified. See for an analysis Van Kampen (2007).

(18)

	\<+gender\>	\<−gender\>		no gender	
	gender 'overrules' animacy	\<+animate\>	\<−animate\>	\<+animate\>	\<−animate\>
\<−oblique\>	de jongen (the boy) *die* **wie*	het meisje (the girl) *dat* *wat* *die* **wie*	het paard (the horse) *dat* *wat*		
\<+oblique\>				de jongen (the boy) *waar … P* P *wie* **P die*	het huis (the house) *waar … (P)* **daar … (P)*
no antecedent				*wie*	*wat* *waar*

The factual irregularity of the A-bar relative paradigm is what matters here. It will be used as an argument to show that the relative paradigm reappears as a filter on the A-bar agreement in successive cyclic long wh-chains (section 4).

3. Syntactic preliminaries

The analysis of the intermediate A-bar pronouns as resulting from a local Spec-head agreement implies that long wh-movement is successive cyclic. It does not explain, though, why the agreement does not appear when the wh-antecedent makes its final landing in a Spec.C. Nor has it been explained why, in its first move, the D$_{\<+wh\>}$ obeys the Left Branch Condition and pied-pipes the NP, but why it does not pied-pipe the CP? Why doesn't the Left Branch Condition hold for the \<+wh\>-marked CP? See the structure in (19).

(19)

CP1
Spec $C^{\varnothing}_{<+Q>}$ 'denk je'   CP2
welke jongen $\Downarrow$
         $\varnothing$

Spec $C^o_{<-Q>}$ 'ze zeiden'   CP3
$t_{DP<wh>}$ $<\pm agr>$
$<agr>$ { *wie* / *die* / *wat* / *dat* }

Spec $C^o_{<-Q>}$ $t_{DP<wh>}$ ze kuste
$t_{DP<wh>}$ $<\pm agr>$
$<agr>$ { *wie* / *die* / *wat* / *dat* }

$<-$pied-piping$>$ CP

$<-$pied-piping$>$ CP

$<+$pied-piping$>$ NP

| which boy | think you $C^o<\pm agr>$ | they said $C^o<\pm agr>$ | she kissed |

(which boy do you think they said she kissed)

The first move of the wh-element *welke* ('which') in (19) pied-pipes (moves along) the NP *jongen* ('boy'). This initial pied-piping continues to be relevant for the subsequent moves of the wh-element from Spec.C to Spec.C. By contrast, the subsequent cases of move $<+wh>$ do not pied-pipe the CP *wie/die/wat/dat ze kuste* ('that she kissed'). The CP is stranded.

    The explanation for this pied-piping asymmetry is quite simple by a re-interpretation of Ross' (1967) Left Branch Condition as proposed in Van Kampen (1997: chapt.5, 2004). The original NP complement (*jongen*) of the wh-element (*welke*) is pied-piped since as an NP it needs the D^o *welke* as a case licenser, see (20).

(20)   a.   *welke   kuste   zij $[_D\ t_{wh}\ [jongen]_{NP}]_{DP}$?
          which   kissed   she $[_D\ t_{wh}\ [boy]_{NP}]_{DP}$?
     b. $[_D$ welke $[jongen]_{NP}]_{DP}$ kuste zij $t_{<wh>}$?
        $[_D$ which $[boy]_{NP}]_{DP}$ kissed she $t_{<wh>}$?
       (which boy did she kissed?)

When case targets N^o, i.e. in languages with morphological case (Slavic, Latin), the complement NP does not need the D^o element, the Left Branch Condition does not hold and subextraction of the $D^o_{<+wh>}$ is possible. In languages without morphological case on the N^o (Dutch, German) case targets D^o (as proposed by Lebeaux 1988: 242f) and pied-piping of the NP complement follows obligatory. Note that it is not the richness of the morphological case-paradigm, but the target position of the case-marking (either on D^o or on N^o) that quite naturally activates or deactivates the Left Branch Condition. In partitive constructions (*combien de livres/wat voor boeken* 'what for books') the preposition takes care of the case-licensing and pied-piping becomes an option.

    Subsequently, there is an economy conflict between preserving major arguments (by pied-piping) or minimally moving only the $D^o_{<+wh>}$ by subextraction. When the Dutch child starts using complex wh-phrases, she first moves the $D^o_{<+wh>}$ alone, see (21)a. Only in a later acquisition step, after the age of 4, the entire wh-phrase is pied-piped, see (21)b.

(21) a. welke wil jij   [t_{wh} liedje] zingen?   (S. 3;7)
          which want you   [t_{wh} song] sing?
          (which song do you want to sing?)
      b. [welke verhaaltje] wil jij t_{wh} voorlezen?   (S. 4;2.8)
          [which story]   want you t_{wh} read
          (which story do you want to read?)

Adult Dutch allows subextraction in limited contexts that can be explained along the lines above (Van Kampen 2004).[9] NP complements, though, are obligatory pied-piped, as in (2)b/(21)b. The order of acquisition step now shows that stranding is not learned, it comes for free. What is learned is that the remnant has to be pied-piped given certain licensing conditions, i.e. case-marking for NPs. These licensing conditions have to be learned. The enlarged options for subextraction in child language start in a period when licensing of NP by a D^o is still optional. This perfectly fits the present proposal.
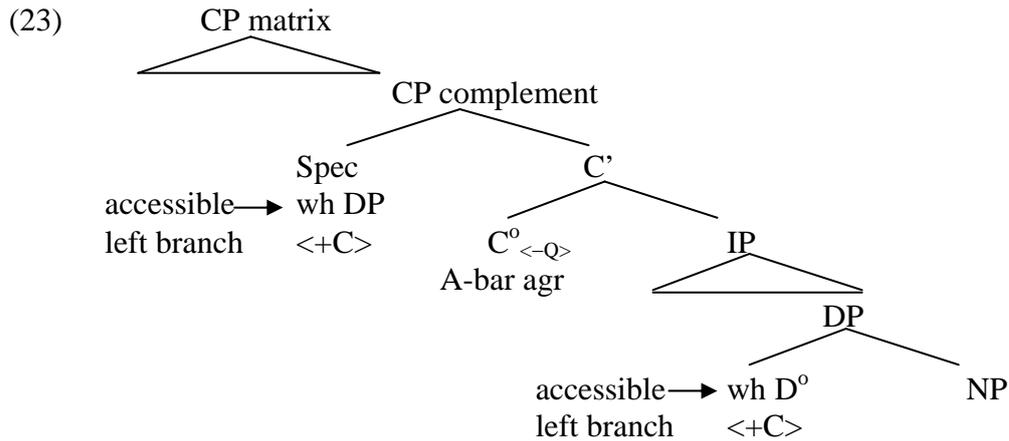
The same pied-piping story holds for the wh-phrase on the left branch of the CP. If the wh-phrase is on the left branch Spec of a CP marked as $<+Q>$, it cannot be extracted anymore. It is a $<+Q>$ licenser for the $CP_{<+Q>}$. Therefore in (22)a the entire CP is topicalized, pied-piping the whole clause *jij kent* ('you knows') along with the wh-phrase *wie* ('who'). By contrast, the same wh-phrase on the left branch Spec of a $CP_{<-Q>}$ will not license that CP, will not activate the Left Branch Condition and must be subextracted, see (22)b.

(22) a. [wie jij kent]$_{CP<+Q>}$ weet ik niet $t_{CP<+Q>}$
          [who you knows]$_{CP<+Q>}$ know I not $t_{CP<+Q>}$
          (I don't know who you are familiar with)
      b. wie$_i$ denk je   [$t_{<wh>i}$ [dat ik ken $t_{<wh>i}$]]$_{CP<-Q>}$?
          who$_i$ think you   [$t_{<wh>i}$ [that I know $t_{<wh>i}$]]$_{CP<-Q>}$?
          (who do you think I am familiar with?)

This shifts the problem. It may be that the wh-phrase in (22)b can be freely extracted, but why did it ever land in such an intermediate Spec.C? After all, the wh-movement into an intermediate Spec.C position cannot have been triggered by a target position $C_{<+Q>}$, since the weak assertive *denken* selects a $<-Q>$ complement. See for this "triggering problem" Lasnik and Saito (1984). There is a semantically relevant trigger $<+Q>$, but where is the local trigger given the $C_{<-Q>}$ in (22)b? My proposal runs as follows. There are two triggers, $<+C>$ and $<+Q>$. The trigger $<+C>$ requires that each A-bar pronoun $<+D, +C>$ gets positioned in the first A-bar position beyond the predicate-argument structure. If the D^o is at the same time a (case) licensor, it will pied-pipe its complement. This may seem a re-description of the contention that rules have to be local, but the position of the first C^o-up is a clausal scope-position that has to be checked anyway as a $C^o_{<+Q>}$ or a $C^o_{<-Q>}$ in order to find out whether the wh-movement has to be local or (pro)long(ed). If the first C^o-up is a $C_{<+Q>}$, the movement triggering feature $<+C>$ will be deactivated, say removed. Otherwise, when the first C^o-up is a neutral head $C^o_{<-Q>}$, like the C^o of the weak assertive *denken* ('think') in (19)/(22)b, the movement triggering feature $<+C>$ of the wh-phrase will not be removed and remain active.

Suppose there is this local movement to the first C^o-up position, see (23).

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[9] The stranding possibilities in Dutch hold for prepositions with an *r*-marked *w-/d*-pronoun (*waar/daar*) and for AP complements of a $Deg^o_{<+wh>}$. See Corver (1990: 195ff).

(23)

The CP complement is an argument of the matrix CP and it is $C^o_{<-Q>}$. The left branch of that CP argument is accessible and (after the first wh-movement) spotted as a $<+C>$. Hence, the $<+C>$/A-bar operation reapplies to the CP argument. There is a target/source overlap in Spec.C. Yet, this time the wh-pronoun will not pied-pipe its complement (the CP complement), since it does not license that $CP_{<-Q>}$ complement. My central point in this usual explanation will be that all contributing factors in the reapplication of wh-movement have already been acquired by the child from more elementary constructions. These are (i) accessibility of information at the left branch, (ii) the movement up to the first A-bar position, (iii) the ± pied-piping factor, (iv) the A-bar agreement from the relative paradigm (as will be shown in section 4.).

My point is of course not to re-describe Chomsky's (1973) Spec.C escape hatch or Ross' (1967) Left Branch Condition and pied-piping. I only argue that the ingredients (i) to (iv) for long wh-movement are already in place long before the child moves on to apply them in a combined fashion. So, my point is that long wh-movement is not learned, but follows as an implication from simple acquisition steps. Not a priori and innate, but previously discovered in more elementary and highly frequent structures.

4. A-bar pronouns from Spec-head agreement

Chomsky (1973) argues that the long wh-movement had to be the outcome of a successive cyclic passage of the wh-phrase through the intermediate Spec.C positions.[10] This successive cyclic passage is reflected in child Dutch as an appearance of A-bar pronouns in the intermediate C^o head positions. It seems natural to derive these intermediate A-bar pronouns by means of a Spec.C-C^o agreement as in Thornton (1990), Van Kampen (1997: chapt. 6). The chain is formed by the Spec.Cs, whereas the spell-out of the C^os is a reflection of local agreement. For that reason, the C^os do not form a chain, cf. the structure in (9)/(19).

The following point is of special interest. Standard adult language evades the use of A-bar pronouns in the intermediate positions of long wh-movement. It restricts itself to the neutral C^o head (complementizer) *dat* only. Child language, by contrast, applies the intermediate A-bar pronouns for a long time almost exclusively. See the numbers in (24) for Laura and Sarah.

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[10] See Boeckx (2003) about the short-move/long-move issue and why a series of short moves may count as more "economical" than a single "suitably delayed" long movement. Boeckx (2003) argues, a bit circularly, that the delay for a single long movement requires the same amount of repetitive structure checking. The checking procedure is so to speak a bit shortsighted. It first spots C^o, but then it needs a closer local inspection to see the $C^o_{<+Q>}$ or the $C^o_{<-Q>}$ specification. If one assumes that the multiple short steps can do with a local checking without restarting the cyclic machine, it is a decisive advantage. The present acquisitional argument is meant to be empirical rather than conceptual.

(24)		agreeing pronoun	complementizer *dat*
Laura (between 7;2-9;0)		74	5
Sarah (between 4;7-6;0)		12	0

Two things must be stressed here. First, long-distance questions appear quite late. Sarah's first long-distance questions are attested after the age of five. There are no long-distance questions attested in the speech of Laura before the age of seven. This is long after the paradigm of question *w*-pronouns and especially the paradigm of relative agreement have been firmly established in the speech of the child. Second, although the intermediate A-bar pronouns appear spontaneously, this does <u>not</u> mean that they have to be learned or that their pattern is innate.

Simple (non-complex) *w*-pronouns don't have an N-complement. The agreeing A-bar pronoun in intermediate position needs only to vary for <±animate> and <±oblique>, not for <±gender> properties of the antecedent. In (25) all examples that should be possible are given and (26) lists the corresponding attested examples in child Dutch (Van Kampen corpus CHILDES and diary notes 1993-1997).

(25) a. wie<+animate> denk je *wie*<+animate> ik leuk vind?
          (who do you think I like?)

      b. wat<−animate> denk je *wat*<−animate> ik leuk vind?
          (what do you think I like?)

      c. waar<+oblique> denk je *waar*<+oblique> ik woon?
          (where do you think I live?)

(26)	a.	wie	denk je	*wie*	er	in de auto	rijdt?	(Laura 8;3.8)
		who	think you	who	there	in the car	drives?	
		(who do you think drives the car?)						
	d.	wat	denk je	*wat*	ik ga	zeggen?		(Sarah 6;4.13)
		what	think you	what	I go	say?		
		(what do you think I will say?)						
	c.	waar	denk je	*waar*	mijn handen	zijn?		(Sarah 4;10.20)
		where	think you	where	my hands	are?		
		(where do you think my hands are?)						

The set of agreeing *w*-pronouns in (25)-(26) is not complete. Example (27) occurs as well.[11]

(27)	wie	denk je	*die*	er	jarig	is?	(Laura 9;1.4)
	who	think you	that	there	'jarig'	is?	
	(who do you think has her/his birthday?)						

In section 2 *die* it was argued that spoken Dutch has the tendency to select *die* with antecedents that are semantically specified for <+animate>, cf. (16). It was shown to hold for relative agreement as well, cf. (15). I assume *die* in (27) to be specified for <+animate> as well.

The CP-adjoined DP closes further grammatical calculations in the CP with an agreement that checks the carry-over of information. Like the relative pronoun in (28)a (cf. (12)), the intermediate agreeing pronoun in (28)b agrees in phi-features with the moved wh-phrase.

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[11] Van Kampen (1997: appendices B and C) reports the spell-out of intermediate attributive *welke* and *w*-adverbs like *hoe*, *wanneer* and *waarom*. I will restrict the present analysis to non-attributive pronouns.

(28)   a.   relative pronoun

DP

DP   CP
agreement
phi   relative $t_{<+C>}$

phi, case

b.   intermediate pronoun

CP

DP   CP
agreement
phi
case }   intermediate $t_{<+C>/<+Q>}$

phi, case

There is a difference between the top-labels in (28)a and in (28)b and the phrase "CP-adjoined DP" covers up that difference. It appears to be irrelevant for the A-bar agreement.

The picture is a bit more complicated when full, complex, wh-phrases exhibit long successive movement. In fact, the agreement properties known from the relative paradigm, with all alternatives and irregularities, seem to reappear in the paradigm of the intermediate A-bar pronoun. These properties were already learned in a previous acquisition step. In (29) all possibilities of intermediate pronouns agreeing with a complex wh-phrase are given. The numbers between brackets refer to the parallel relative pronouns in section 2. The variation of the intermediate pronoun shows that their choice is due to agreement, not to movement.[12]

(29)   a.   welke jongen   denk je   *die*<+gender> ik leuk vind?
            (which boy do you think I like?)   (cf. (13)a)
       b.   welk huis/welk meisje   denk je   *dat*<−gender>dat ik leuk vind?
            (which house/which girl do you think I like?)   (cf. (13)b)
       c.   in welk huis   denk je   *waar*<+oblique> ik woon?
            (in which house do you think I live?)   (cf. (14)c)
       d.   op welk huis/welke jongen   denk je   *waar*<+oblique> ik *op* verliefd ben?
            (which house/which boy do you think with whom I am in love)   (cf. (14)d)

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[12] This contrasts with Barbiers, Koeneman and Lekakou (2007). Also in contrast to Barbiers, Koeneman and Lekakou (2007) is my assumption that definiteness does not play a role for the <±wh> A-bar pronoun. I do not see in which case <±definite> really proves to be a phi-feature. Compare the following contrastive minimal pairs (cf. (26)a/(27)), where *er* ('there') signals the <−definite> subject. Removing *er* from the relative examples (ii) makes the sentences grammatical.
   (i)   Intermediates
         a.   wie denk je   *die* t_{wh} er   jarig is?
         b.   wie denk je   *wie* t_{wh} er   jarig is?
              who think you   that t_{wh} there   'jarig' is?
              (who do you think has her/his birthday?)
   (ii) Relatives
         a.   *de jongen   [*die* er jarig is]   (the boy that has his birthday)
         b.   *het meisje   [*wat* er jarig is]   (the girl that has her birthday)

e. op welke jongen   denk je   *op wie*<+animate> ik verliefd ben?
(which boy do you think with whom I am in love)   (cf. (14)e)

f. welk meisje   denk je   *die*<+animate> ik leuk vind?
(which girl do you think I like?)   (cf. (15))

g. welk huis/welk meisje   denk je   *wat*<−gender> ik leuk vind?
(which house/which girl do you think I like?)   (cf. (17))

The parallel attested examples in child Dutch are given in (30). Example (30)b with *dat* will further be left out of the discussion. It is a neutral C° head generalized to all long distance questions in standard Dutch. Moreover it is not or hardly attested in the child data, cf. the figures in (24).

(30) a. welke stift<+gender> denk je   *die*   ik moet nemen?   (Laura 7;8.18)
     which felt-tip   think you   that   I must take?
     (which felt-tip do you think I must take?)

b. welk meisje denk je *dat* ik leuk vind   (adult Dutch)
     (which girl do you think I like?)

c. in welk huis   denk je   *waar*   jij woont?   (Sarah 4;10.20/
     in which house   think you   where   you live?   Laura 7;7.10)
     (in which house do you think you live?)

d. op welke stoel   denk je   *waar*   ik   op zit?   (Laura 7;10.1)
     on which chair   think you   where   I   on sit?
     (on which chair do you think I sit?)

e. Not attested, but possible. Attested is:
     op wie   denk je   *op wie*   Sarah verliefd is?   (Laura 8;3.8)
     with who   think you   with who   Sarah in love is?
     (with whom do you think Sarah is in love?)

f. welk meisje   denk je   *die*   ik   een hand geef ?   (Laura 8;3.8)
     which girl   think you   that   I   a hand   give?
     (which girl do you think I shake hands with?)

g. welk cadeau   denk je   *wat*   ik geef?   (Laura 7;10.1)
     which present think you   wat   I give?
     (which present do you think I will give?)

The relative agreement paradigm successfully excludes the cases in (31). These are unattested in child language.

(31) a. *in welk huis denk je   *daar*<+oblique> ik woon?
     (in which house think you I live?)   (cf. (13)c)

b. *wat voor boeken<+plural> denk je   *wat*   ik   heb gelezen?
     what   for books do you think   what   I   have read?
     (what kind of books do you think I have read?)

c. *welke boeken<+plural> denk je   *wat*   ik   heb gelezen?
     which books   do you think   what   I   have read?
     (which books do you think I have read?)

d. *welke villa<+gender> denk je *wat* ik ga kopen
     (which villa do you think I will buy?)

All intermediate obliques have to be <+wh> *waar* and cannot be <−wh> *daar*, as already predicted by relative agreement, cf. (13)c. The A-bar pronoun *wat* cannot agree with the

plural *boeken* in relative agreement nor can it be spell-out of agreement in (31)b,c. The same holds for *wat* in (31)d. It cannot agree with the <+gender> noun *villa*. As a relative pronoun *wat* can only refer to a <−gender> noun. Therefore, *wat* can agree with the <−gender> noun *spelletje* in (32), cf. (30)g and (17).

(32)   a.   wat voor spelletje<−gender> denk je   *wat*   ik wil doen ?   (Laura 7;9 .27)
            what for game   think you   what   I want do ?
            (what kind of game do you think I want to do?)

The agreement solution also predicts (correctly) that the intermediate positions are never filled in by a repetition of the wh-phrase. The intermediates are for pronominal forms only. See the (unattested) examples in (33).

(33)   a.   *welke jongen denk je   *welke jongen*   ik leuk vind?
            which boy   think you   which boy   I like?
       b.   *welk huis   denk je   *welk huis*   ik leuk vind?
            which house   think you   which house   I like?
       c.   *in welk huis   denk je   *in welk huis*   ik woon?
            in which house   think you   in which house   I live?

The agreement rule may extend to the preposition of oblique phrases, cf. (30)e. If the pronoun can express inherent case, as in (34)a,b (cf. (30)c), the preposition is not repeated. In (34)a *waar* reflects the locative. It corresponds with the antecedent *op welke school* ('at which school'). In (34)b *wie* is inherently marked for dative ('meewerkend voorwerp'), which is possible in Dutch (ANS 1997: par. 5.5.8.2). However, if the intermediate *w*-pronoun cannot reflect oblique case, the preposition is repeated. In (34)c *wie* would not be a replacement of *op wie*, cf. (14)e (Van Kampen 1997: 151f).

(34)   a.   op welke school   denk je   *waar*   Laura zit?   (Laura 8;3.8)
            at which school   think you   where   Laura sits?
            (at which school do you think Laura is?)
       b.   aan wie   denk je   *wie*   ik een brief schrijf?   (Laura 7;9.2)
            to who   think you   who   I a letter write?
            (to whom do you think I write a letter?)
       c.   op wie   denk je   [*op wie*]$_C$o Sarah verliefd is?   (Laura 7;10.25)
            with who   think you   with who   Sarah in love is?
            (with whom do you think Sarah is in love?)

The present approach suggests that the oblique preposition and its A-bar pronoun fit into the C^o head position as a complex head. See the brackets in (34)c above for the anomalous analysis. [P + A-bar features]$_C$o. The nice outcome of the present approach is that it successfully explains by relative agreement the grammaticality of (34)c versus the ungrammaticality of the three examples in (33).[13]

This leaves me with a final difficulty. The intermediate A-bar pronoun *wie* is correct as a <+animate> spell-out of an intermediate A-bar pronoun for the phrase *welke jongen* and *welk meisje* in (35). Yet, it is not predicted by relative agreement which would spell out the also correct *die* for <+gender>/<+animate> antecedents, see the scheme in (18) (cf. (13)a/(15)).

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[13] See for a different analysis Pankau (2007).

(35) a. welke jongen denk je *wie* daar loopt? (Laura 8;3.8)
which boy think you who there walks?
(which boy do you think is walking over there?)
b. welk meisje denk je *wie* ik een hand geef ? (Laura 8;3.8)
which girl think you who I a hand give ?
(which girl do you think I shake hands with?)

The main rule for relative pronouns is to select the *d*-pronoun if gender agreement is possible and to select the *w*-pronoun otherwise.[14] Around the age of five when the long wh-movements and their intermediate A-bar pronouns begin to appear with some regularity in the speech of the child, the relative agreement pattern is already well established. The relative paradigm reappears for the intermediate pronoun agreement. Yet, the more specific gender agreement that determines the *d*-set weakens to an option under the more complex calculation of long wh-movement. Descriptively, the relative A-bar paradigm and the intermediate A-bar paradigm can now be stated as in (36).

(36) A-bar agreement with a locally adjacent antecedent holds for relative pronouns and for the intermediate pronouns in long wh-movements.
a. Relatives
Select a *d*-set pronoun if the antecedent has gender. Select a *w*-set pronoun otherwise.
b. Intermediates
As relatives, or select a *w*-set pronoun if the antecedent is <+animate>.

The prediction in (36) seems an excellent underlining that the order of acquisition steps is crucial to understand the learnability of grammar.

From a somewhat broader point of view, one may notice that the present agreement proposal fits with the Rizzi's (1996) wh-criteron. It also tallies well with the "doubly-filled Comp filter" (Chomsky and Lasnik 1977). Either the C^o gets realized or the Spec.C, but not both. The trigger <+C> and <+Q> features on the C^o head are erased when the specifier moves in the final landing side. The non-trigger <−Q> feature attracts phi-agreement. The wh-movement feature <+C> is not erased and consequently the wh-phrase <+D, +C> moves further.[15]

5. Partial movement: single long (successive) chain or double short chain?
Child Dutch exhibits another type of complex question, see (39).[16]

(39) a. *wat* denk je *waar/wie/wat* dit is?
what think you where/who/what this is?
(where/who/what do you think this is?)

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[14] Diachronically, Afrikaans and English show that indeed the *w*-set takes over when gender disappears.
[15] The doubly-filled Comp filter has also been reinterpreted by Koopman (2000) in a different way and perspective.
[16] The partial movement type is also attested in Dutch dialects (Barbiers, Koeneman and Lekakou 2007) and in informal Dutch, see (i). It was not attested, though, in the maternal input of the children considered here.
(i) (Irene Moors, TV presenter. On screen 17-12-2007)
wat denk je *waar* we naar toe gaan?
what think you where we at to go?
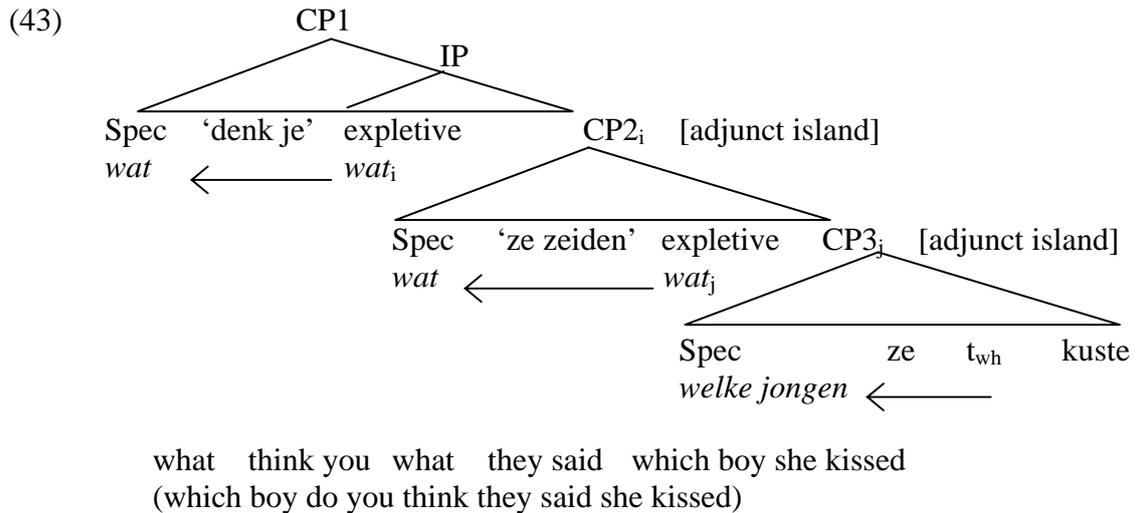(where do you think that we will go?)

This type of complex question is also attested in e.g. adult German (Fanselow 2006) and labeled 'partial movement'. The wh-elements in the partial movement construction do not fit the conception of long-distance string that has been studied above. The wh-element *wat* in the matrix clause of (39) cannot be changed into *wie* or *waar*, see (40).

(40)   a. *in welk huis/waar* denk je *waar* ik woon?   (long wh-movement)
            wat denk je *in welk huis/waar* ik woon?   (partial wh-movement)
            *waar denk je *in welk huis* ik woon?   (*partial wh-movement)
            (in which house do you think I live)
   b. *welke jongen/wie* denk je *wie* ik heb gekust?   (long wh-movement)
            wat denk je *welke jongen/wie* ik heb gekust? (partial wh-movement)
            *wie denk je *welke jongen* ik heb gekust?   (*partial wh-movement)
            (which boy/who do you think I kissed?)

No such invariability for the sentence initial wh-phrase was present in any of the long successive wh-chains in section 4. Another difference is that the second wh-element in (39), the one in front of the subordinate clause can be expanded in a full wh-phrase, see (41) in comparison with (33). Again, (42) states some attested examples in child Dutch.

(41)   a. *wat*   denk je [welke jongen]   ik leuk vind?
            what   think you which boy   I nice find?
            (which boy do you think I like?)
   b. *wat*   denk je [in welk huis]   ik woon?
            what   think you in which house I live?

(42)   a. *wat*   denk je   wat voor woord dit is?   (Laura 10;10.24)
            wat   think you what for word this is?)
            (what kind of word do you think that this is?)
   b. *wat*   denk je   wat ik voor liedje zing?   (Sarah 5;5.12)
            wat   think you what I for song   sing?)
            (what kind of song do you think that I sing?)
   c. *wat*   denk je   bij de hoeveelste   ik ben?   (Laura 7;11.8)
            wat   think you at the how maniest   I am?)
            (at which number do you think I am?)

The full wh-phrases in the middle of (41) and (42) must be on top of a wh-chain of their own. The original notion wh-chain, and its explanatory potential, is saved if we assume that the *wat*-constructions in (41)-(42) are based on two chains. For that reason, I accept the proposal by Fanselow and Mahajan (1996, partly following Dayal 1994) that the first wh-element *wat* in (41)-(42) is a type of sentential expletive linked to the subordinate $CP_{<+Q>/<+wh>}$. No long distance chain is involved in partial wh-movement. Compare the structure in (21) for long successive wh-movement to one in (43) with partial short movements.

(43)

```
        CP1
       /    \
      /      IP
     /      /  \
  Spec  'denk je' expletive        CP2ᵢ   [adjunct island]
  wat      ←──────── watᵢ         /    \
                                 /      \
                             Spec  'ze zeiden' expletive   CP3ⱼ   [adjunct island]
                             wat      ←──────── watⱼ       /    \
                                                          /      \
                                                      Spec        ze  t_wh  kuste
                                                   welke jongen  ←────────
```

what   think you   what   they said   which boy she kissed
(which boy do you think they said she kissed)

This orientation differs from and is incompatible with the wh-chain analysis offered in Barbiers, Koeneman and Lekakou (2007). The abstract expletive in (43) functions as a pronominal stand in for the subordinate $CP_{<+Q>}$ as a whole. It moves from the matrix object position to the matrix Spec.C, because of the $<+Q>$ feature. Its expletive nature explains its inability to change form and its inability to turn into a wh-phrase. The subordinate $CP_{<+Q>}$ can no longer be in argument position. It is forced to become an adjunct to the expletive, because its complement function and object theta relations are taken over by the expletive.[17] Compare the adjunct island CP (with expletive *er*) in (44)a to the complement CP in (44)b.

(44) a. *welke jongen   rekende jij   *er*   op [dat je nog   t_wh kende]_CPadjunct ?
          which boy   counted you   there   on [that you still t_wh knew] _CPadjunct?
      b. welke jongen   dacht jij   [dat je nog   t_wh kende]_CPcomplement ?
          which boy   thought you   [that you still   t_wh knew] _CPcomplement?
          (which boy did you think that you still knew?)

This explains why the verbs *denken* ('think') and *zeggen* ('say'), that do in general not support sentential complements $CP_{<+Q>}$ (cf. section 3), are in fact construed with such a $<+wh>$ $CP_{<+Q>}$ in (43) (*wat ze zeiden*, *welke jongen ze kuste*). It is the abstract expletive *wat* that satisfies the insertion frame of the verbs *denken* and *zeggen*. Due to that same expletive, the $CP_{<+Q>}$ is in adjunct position and hence compatible with *denken* and *zeggen*.

6. Long-distance movement as an overlap of (cyclic) localities.

All movement can be learned from example sets with the shortest steps possible, assuming that long-distance movement and island constraints follow from (i) left branch accessibility for the $<+D>$ features, (ii) the minimality condition on movements $<+C, +D>$ and (iii) (lack of) pied-piping.

In section 3 it was argued that the child begins with subextracting the $D^o_{<+wh>}$ of a complex wh-phrase, as in (45)a. In a second step only, the NP complement is pied-piped, as in (45)b.
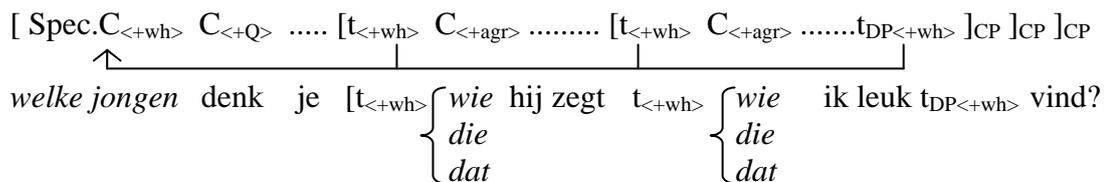
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[17] Fanselow and Mahajan (1996) argue, on different grounds, that the $CP_{<+Q>}$ is a complement. I won't go into the different analyses of partial movement here. See Fanselow (2006) for an overview.

(45) a. welke wil jij   [t$_{wh}$ liedje] zingen?   (S. 3;7)
          which want you   [t$_{wh}$ song] sing?
          (which song do you want to sing?)
      b. [welke verhaaltje] wil jij   t$_{wh}$ voorlezen?   (S. 4;2.8)
          [which story]   want you   t$_{wh}$ read
          (which story do you want to read?)

This order of acquisition step shows that stranding is not learned, it comes for free. Pied-piping is learned. Dutch allows subextraction in limited contexts. Hence, the child has to acquire the licensing conditions for the remnant, such as an obligatory D^{o} context for case-assignment to NPs.

Subsequently, the child starts using long-distance wh-questions. In contrast to simple A-bar pronoun constructions, long wh-questions are fairly rare in the input.[18] One cannot say that the child is "trained" on such structures. Nevertheless, they appear after the age of 5 and they take forms not present in the input. Four devices are to be combined by the child, see (46).

(46) a. The short step trigger $<+C>/<+Q>$ to $C_{<-Q>}$.
      b. The left branch accessibility (Chomsky's 1973 "escape hatch").
      c. Obligatory pied-piping the NP complement.
      d. The intermediate A-bar pronoun agreement.

[Spec.C$_{<+wh>}$ C$_{<+Q>}$ ..... [t$_{<+wh>}$ C$_{<+agr>}$ .... [t$_{<+wh>}$ C$_{<+agr>}$ ....t$_{DP<+wh>}$]$_{CP}$]$_{CP}$]$_{CP}$

welke jongen denk   je   [t$_{<+wh>}$ { *wie* hij zegt   t$_{<+wh>}$ { *wie*   ik leuk t$_{DP<+wh>}$ vind?
                                       { *die*   { *die*
                                       { *dat*   { *dat*

A closer look reveals that all four devices in (46) are known from previous acquisition steps and have been acquired earlier from highly frequent simple contexts, see (47). The ages are a rough indication. Note that long-distance questions appear quite late in the speech of the child (after the age of 5). Long distance questions solicit the hearer's opinion and are by consequence dependent upon a theory of mind reading (Van Kampen 1997: 141). The young child is a formidable mind-reader, but making the systematic distinction between the inner and outer domain is a different matter and the corresponding grammatical devices come in later.

(47) Already learned
      a. A-bar pronouns $<+C>$ appear in initial position and they leave an argument gap: learned form all simple topic and question sentences.   (before the age of 3)
      b. Left branch subextraction: learned from all wh-phrases.   (before the age of 4)
      c. Obligatory pied-piping the NP.   (before the age of 5)
      d. A-bar pronoun agreement: learned from relatives.   (between 4-5)

Movement affects the left branch for reasons that were already known from the stranding constructions in (45)a above. So, movement of the wh-element and stranding the remaining constituent is old. The fact that the CP does not pied-pipe is old, since, in contrast to NP, the

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[18] In the Van Kampen corpus (120 files of 45 minutes recordings, a total of 61.526 input sentences) only 4 long-distance wh-questions appeared in the speech of the mother.

$CP_{<-Q>}$ does not need a $<+Q>$ licenser and it is only obligatory licensing that forces the learner into pied-piping.

The long wh-movements show how a short wh-movement to the nearest $CP_{<-Q>}$ brought the A-bar pronoun into a new domain for a new short step. There happened to be an overlap of movement localities. This implies that lack of a locality overlap causes an island constraint for wh-movement. That seems trivial, but the logical consequence is that syntactic islands need not be learned. They follow from any stupid non-overlap of movement localities. The learner discovers transparency as something already present in the system, the left branch extraction and the pied-piping triggers. The long movements follow without need to notice or learn island constraints.

7. Psychological reality

To say that grammatical distinctions reflect a psychological reality is at the moment to say very little. It is more a common sense perspective about future developments. This is not to defend skepticism about the perspective as such. It is only to point out that the perspective is as obvious as it is still open and largely unexplored.

On the sunny side of things, language acquisition seems to me to be the first field where mere grammatical distinctions may predict psychologically real performance in some systematic fashion. A basic point is that grammatical categories and principles are acquired in highly local and highly repetitive patterns. That locality, and hence the learnablity of the system, is preserved in the final state. Locality in grammar does not seem to be some mysterious innate property, but rather a property imposed by the need to maintain learnability for toddlers.

The more specific point from the acquisition analysis above has been that the previous acquisition of the paradigm for relative A-bar pronouns was crucial to grasp long wh-movements. The explicit marking of that wh-chain by agreement is spontaneous child language. One cannot say that the long wh-movement is learned. In the first place, the long wh-constructions are rare in the input. In the second place, they appear in child language almost exclusively with a spontaneous wh-agreement pattern. Nevertheless, it would be wrong to conclude from the spontaneous appearance of an A-bar agreement that principles and categories are innate. It rather shows how acquisition works as a recombination of devices already acquired from simplified highly repetitive patterns. The development of a wh-chain unmarked by agreement follows later.

An advantage of language acquisition over the analysis of language perception and language production is that the acquisition procedure is one of slow motion. It tracks developments that can be measured in weeks and months rather than in milliseconds. The acquisition performance is like historical change. It can be reconstructed by a typical linguistic method, the study of language corpora. When considering longitudinal acquisition data, ambitious hypotheses, like for example the proposal that Dutch/German is basically SVO (Kayne 1994) runs into considerable problems, but successive cyclicity of wh-movement fits the data wonderfully.

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