Cues and economy in the acquisition of verb movement
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1. Introduction
In this paper we will discuss how economy principles interact with cues in the input in bilingual first language acquisition. We will look at the acquisition of verb placement in a child acquiring English and Norwegian simultaneously. Based on data from this child, it will be argued that when faced with ambiguous cues with respect to the verb movement parameter, children do not necessarily adopt the default, less marked setting. Rather, they may opt for a setting which yields an overall consistent grammar, even when this grammar contains operations that are more costly than those used in the target language. We will suggest that economy in acquisition may involve consistency in a grammar in correlation with economy in the more traditional sense within minimalism, where moving an element in general is considered more costly than not moving it (Chomsky 1995).

2. Cues and economy in language acquisition
2.1. Monolingual acquisition
It is widely assumed that economy principles strongly influence (or even direct) first language acquisition (Platzack 1996, Roberts 1999, Zuckerman 2001). According to Platzack (1996), the economy considerations of the Minimalist Program imply that children should initially opt for the least marked possible grammar. On the definition of markedness, he claims that overt syntactic operations are more costly than covert ones, and he further states that "the mechanisms forcing overt operations in a language will be the marked ones" (p. 369). If children prefer the least marked grammar, they will initially assume all features to be weak and thereby avoid movement. Platzack captures this idea in what he calls the Initial Hypothesis of Syntax (Platzack 1996:376):

(1)   Initial Hypothesis of Syntax (IHS)
         All instances of feature checking take place after spell-out

Within this approach, language acquisition is seen as a gradual adjustment of the IHS to the target language, based on positive evidence in the input.

Lightfoot (1999a, b) assumes a somewhat different approach to language acquisition. Based on work by Dresher & Kaye (1990) and Dresher (1999), he suggests that language acquisition is not a process of trying to match the input. Rather, he claims that the child uses structures in the input as a *source of cues* for parameter setting. The resulting grammar

may not necessarily be identical to the input. According to Lightfoot (1999a:149) "the output of the grammar is entirely a by-product of the cues that the child finds." Whether or not a child sets a given parameter to the same setting as the one found in the adult language depends on how robustly the cues for this specific setting are expressed in the input.

2.2. Bilingual acquisition

Economy is also claimed to play a crucial role in language mixing in bilingual first language acquisition (Schlyter & Håkansson 1994, Schlyter 1998, Gavarró 2003). Schlyter & Håkansson (1994) studied three Swedish/French bilingual children for whom Swedish was the dominant language. In the data from these children, they did not find any instances of transfer of the V2 parameter from Swedish into French. Schlyter & Håkansson suggest that this is related to the notion of markedness "in the sense that an unmarked word order (i.e. SVX) can be transferred, but not a marked one (XVS)" (p. 58). Assuming a marked structure to be a structure involving costly operations such as movement, this indicates that the direction of language mixing is closely linked to the notion of economy.

Döpke (1998, 2000), on the other hand, takes a cue-based approach to cross-linguistic influences in bilingual language acquisition. She discusses how different structures in a bilingual child's two languages may present contradicting cues for parameter setting, thus creating a *cue conflict* for the child. A study of the simultaneous acquisition of German and English showed that bilingual children had problems with placement of the non-finite verbs in German.[1] Whereas monolingual German children early differentiate between non-finite verbs in sentence-final position and finite verbs in the second position, Döpke's three bilingual subjects took longer to acquire this distinction. In what she refers to as phase III[2], Döpke claims that these children place German verbs in a mid-sentence position regardless of whether they are finite or not. As unmarked main clauses in German and English are superficially similar (subject–verb–object), Döpke (1998:561) claims that "(...) the partially overlapping surface structures in German and English make it temporarily difficult for the bilingual child to differentiate between the two languages on the level of syntax, and that the superficial similarities are instrumental in delaying the correct placement of

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[1]German is a V2 language. Thus, finite verbs are always in the second position in main declarative clauses. Non-finite verbs do not move out of the VP and are therefore located in sentence-final position, as German VPs are head final.

[2]Phase III corresponds to different ages for the three children, 2;7 - 2;11, 2;5 - 3;0, and 2;3 - 2;7 in their development of German.

the nonfinite verb within the verb phrase." Hence, she suggests that the input from English enhances the "verb-before-object" cue for German, and creates a cue conflict for the bilingual children with respect to the setting of the head parameter in German. Thus, when the verb occurs in a mid-sentence position in German, the child presumably has mis-set the German VP to being head-initial, and consequently, both finite and non-finite verbs may occur in front of the object. In addition, Döpke (1999) found that these children sometimes raised the finite verb past negation and even past subjects in English. This is similarly argued to be caused by cue competition. In English, the copula and auxiliaries are in fact raised past both negation and the subject. The fact that this pattern is found in German with both finite main verbs, finite copula, and finite auxiliaries, may enhance the verb-raising cue for English. The result is that they occasionally raise finite main verbs in a non-target-like fashion, and more importantly, this raising is less economical than what is found in the target language.

3. The current study

3.1. The subject

The subject for the current study is an English/Norwegian bilingual girl, Emma, who was born and grew up in Norway with her American mother and Norwegian father. Their home language was American English. Both her parents claimed that they as a family only used this language, and that they never code-switched between Norwegian and English when interacting with Emma[3]. This claim is confirmed in the data collected. From the age of 1, Emma daily attended a day-care centre, where Norwegian was the only language used.

3.2. The data collection

The data from Emma were collected weekly over a period of three months, from she was 2;7.10 to 2;10.9. Every second week her parents tape-recorded her for one hour in daily family situations (during meals, playing, etc.). Every other week the investigator visited the family and played with Emma for an hour. The investigator and Emma always spoke Norwegian together. In fact, during the first six recordings Emma was under the

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[3]Except for using the Norwegian word *sånn* for which there is no English equivalent. It generally means something like *there you go* or *alright*. The family also consistently used some Norwegian words for Norwegian concepts, like *barnehage (day-care centre), matpakke (packed lunch)*, etc.

impression that the investigator did not know English.[4] Hence, she always addressed her in Norwegian (also after the seventh recording). All the data were based on spontaneous speech, and only Emma's utterances were transcribed.

3.3. Verb placement in English and Norwegian
The word order in declarative main clauses is superficially the same in Norwegian and English, viz. subject–verb–object (SVO), as shown in (2):

(2) a. Jeg så   en film igår.
      I   saw a film yesterday
   b. I saw a film yesterday.

However, in non-subject-initial clauses the verb is in different positions in Norwegian and English. Norwegian, being a verb second (V2) language, requires the finite verb to be in the second position (3a), whereas in English the main verb remains inside the VP in the overt syntax, and only moves to I covertly at LF (3b):

(3) a. Igår   gikk jeg på kino.
      yesterday went I   on cinema
   b. Yesterday I went to the cinema.

V2 is traditionally analysed as V-to-C(omp) movement (cf. Koster 1975, den Besten 1983). More recently Rizzi (1997) has suggested that the CP domain consists of several functional projections (ForceP, TopP, FocP, FinP, etc.). This proposal opens up the possibility that V2 constructions may involve movement of the verb to different positions within the CP domain. As the details of the CP domain will not be relevant for the current investigation, we will in the following assume only one projection in this domain, CP. Similarly, for simplicity we will also assume only one IP projection, rather than a split IP (cf. Pollock 1989). Thus, Norwegian has V-to-C movement of all finite verbs in main declarative clauses, whereas in English, verbs in such clauses remain in situ.

    V2-effects are also found in negations and *yes-no* questions in Norwegian. In both these constructions we see that the finite verb has moved out of the VP, either preceding negation (4a-b) or preceding the

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[4]At 2;8.20 (the seventh recording) she heard the investigator speaking English to her American grandparents and with surprise commented to her mother: "They're speaking English!"

subject (4c-d). This is true for both lexical verbs, copula *be*, and auxiliaries. In English on the other hand, only the copula and auxiliaries may precede negation in declarative clauses and the subject in *yes-no* questions (5b, d), whereas main verbs stay inside the VP and require *do*-support (5a, c):

(4) a. John så   ikke filmen.
     John saw not film.DEF
  b. John har ikke sett   filmen.
    John has not   seen film.DEF
  c. Så   John filmen?
    saw John film.DEF
  d. Har John sett filmen?
    has John seen film.DEF
(5) a. John did not see the film.
  b. John has not seen the film.
  c. Did John see the film?
  d. Has John seen the film?

Monolingual children acquiring English generally correctly leave the main verb in situ in all the relevant constructions. Subject-auxiliary inversion in *yes-no* questions is attested very early (Stromswold 1990). However, *yes-no* questions and negated clauses without an auxiliary involve *do*-insertion. This is a rather complex operation, involving the addition of a dummy-element whose only function apparently is to check Tense and Agreement features in I. Consequently, *do*-insertion is a later acquisition. In a study of three monolingual English-speaking children, Anderssen (1996) found that *do*-insertion was used productively in negative clauses at the age of 2;5, 2;6, and 2;9, respectively for the three children. Still, subject-main verb inversion and main verbs preceding negation is found to be practically non-existent in monolingual English-speaking children (Déprez & Pierce 1993).

V2-effects in Norwegian has been found to be acquired very early by monolingual Norwegian-speaking children, both in non-subject-initial clauses, *yes-no* and *wh*-questions, and negated clauses (Westergaard 2003).

3.4. The challenge for the bilingual child
The obvious challenge for an English/Norwegian bilingual child with respect to verb placement is how to set the V2 parameter. Norwegian clearly is a [+V2] language, whereas English only exhibits residual V2. Based on the brief overview of economy and cues in (bilingual) language acquisition in section 2., as well as the facts about verb placement

presented in section 3.3. we will propose two predictions concerning verb placement and language mixing in the simultaneous acquisition of English and Norwegian. Assuming that economy considerations strongly influence the nature of cross-linguistic constructions in bilinguals we would expect that to the extent bilingual children produce cross-linguistic constructions in either of their two languages, the non-target-like constructions will always be more economical than the target, i.e. children will only transfer less costly operations from one language into the other. This is formulated as Prediction 1:

Prediction 1
If a certain construction is different in language A and language B, and the one in A is less marked (i.e. less costly) than the one in B, this may lead bilingual children to transfer the less marked structure of language A into language B.

With respect to verb placement, Prediction 1 hypothesizes that the English setting for the verb movement parameter may be transferred into Norwegian, as the former is more economical (i.e. does not involve movement) than the latter.

The second prediction assumes a cue-based approach to language acquisition. In cases where the cues for a certain parameter setting in one of the bilingual child's language are somehow weakened, the settings for this parameter may be transferred from the other language. The robustness of cues may be weakened when the cue constructions (i) are infrequent in the input, (ii) provide ambiguous cues with respect to parameter setting, or (iii) are themselves complex, making the cues less available to the child. This is formulated as Prediction 2:

Prediction 2
If the cue structures for a certain feature in language A are not robust enough in the bilingual input, their function as cues may be weakened. If corresponding cue structures for this feature are robust in language B, bilingual children may transfer specifications for this feature from language B into language A.

As we saw in section 3.3. verb movement is more consistent in Norwegian than in English. The somewhat inconsistent pattern found in English may weaken the strength of the cues for the verb movement parameter in English. If this is the case, Prediction 2 hypothesizes that the Norwegian setting for this parameter may be transferred into English.

In the remaining sections we will examine the data from Emma, and discuss our findings with specific reference to the two predictions made

above. Towards the end we will speculate on whether economy in acquisition may involve an interplay between consistency in a grammar and economy in the more traditional view, where movement in general is assumed to be more costly than non-movement.

4. Results
4.1. Verb placement in English
Three different constructions in Emma's English indicate that she to some extent employs non-target-like verb movement in English. These constructions are non-subject-initial clauses, negations, and *yes-no* questions.

4.1.1. Non-subject-initial clauses
The data show that in general, finite verbs (whether it is a lexical verb, an auxiliary, a modal, or a copula) figure correctly in the position following the subject in non-subject-initial main clauses, as shown in (6). However, structures like (7) with the finite verb moved past the subject are also found[5]:

(6) a. That we need to take away maybe.	(2;8.5)
b. Then I was having a hole in mine hair.	(2;9.2)
c. Now I can see it.	(2;8.5)
d. Now that is away.	(2;8.5)
(7) a. Now throw I it.	(2;8.5)
b. Now have I ringed Angus.	(2;8.17)
c. Now can <du>[6] drive.	(2;8.5)
d. <Sånn>, now is that all done.	(2;8.5)

In fact, in 23,7% of Emma's English non-subject-initial clauses, the finite verb is placed in the second position.[7] See Table 1 below:

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[5] The use of words from the non-target language is indicated by placing the relevant word in < >.

[6] Emma frequently used the Norwegian word *du* 'you' for English *you*.

[7] Lexical verbs and copula/modals/auxiliaries are almost equally likely to be moved. Lexical verbs occur in a moved position 21% of the time; copula/modals/auxiliaries occur in a moved position 29% of the time.

Table 1: Word order in Emma's topicalised English main clauses

Rec. no.	Rec. 2	Rec. 4	Rec. 6	Rec. 8	Rec. 10	Rec. 12	Total
Age	2;7.14	2;8.5	2;8.17	2;9.2	2;9.23	2;10.8	
XP-S-V	**6**	**19**	**17**	**9**	**6**	**1**	**58**
	75%	65,5%	85%	81,8%	100%	50%	76,3%
*XP-V-S	**2**	**10**	**3**	**2**	**0**	**1**	**18**
	25%	34,5%	15%	18,2%	0%	50%	23,7%
Total	**8**	**29**	**20**	**11**	**6**	**2**	**76**

According to Döpke (1997), these kinds of constructions are not found in monolingual English children. When they start producing topicalised utterances, the word order is always XP–S–V, with the finite verb remaining in situ.

4.1.2. Negation
Similar tendencies are found in Emma's use of negation. She correctly places both auxiliaries, modals, and copula *be* in front of the negated element *not*, as illustrated in (8):

(8) a. Is it not called xx[8] a rooster?   (2;8.17)
   b. I could not do it.   (2;7.14)
   c. Cause he will not have a diaper.   (2;8.5)
   d. And this doll is not tired.   (2;9.2)

However, negative clauses with a main verb only are more problematic. Emma produced 33 such utterances throughout the recording period. Out of these, the majority (69,7%) showed preverbal negation, exemplified in (9):

(9) a. I not hurt this foot.   (2;8.5)
   b. She not heard me.   (2;10.8)

Only three of the 33 negative utterances exhibited *do*-insertion:

(10) a. Now I don't have xx that train.   (2;7.14)
    b. Didn't <du> take that?   (2;7.14)
    c. I don't want +...[9]   (2;7.14)

In the remaining seven utterances, the finite main verb has moved out of the VP, and precedes the negative element. See Table 2 below for details.

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[8]xx in the transcription refers to an unintelligible word in the recording.

[9]+... in the transcription indicates that the sentence was not completed.

(11) a. I hurt not this knee now. (2;8.5)
    b. He like it not. (2;8.17)
    c. She have not dress. (2;9.2)

Table 2: Emma's English negations with a main verb only (negations with auxiliaries and copulas are excluded)

Rec. no.	Rec. 2	Rec. 4	Rec. 6	Rec. 8	Rec. 10	Rec. 12	Total
Age	2;7.14	2;8.5	2;8.17	2;9.2	2;9.23	2;10.8	
Neg-V	**3**	**7**	**9**	**0**	**2**	**2**	**23** 69,7%
***do*-Neg-V**	**3**	**0**	**0**	**0**	**0**	**0**	**3** 9,1%
V-Neg	**0**	**3**	**1**	**2**	**1**	**0**	**7** 21,2%
Total	**6**	**10**	**10**	**2**	**3**	**2**	**33**

Hence, when looking at Emma's production of negated utterances with a main verb only (leaving out both negative constructions with modals and auxiliaries, and with the copula *be*), we found that the main verb precedes the negative element 21,2% of the time, indicating that she to some extent is employing verb movement.

In addition to this, Emma also frequently raises the verb *gonna* in negations. In fact, in 16 out of the 17 instances of *gonna* with negation found in the data, this verb is raised to a position preceding the negative element, as illustrated in (12a-b). The only instance of *gonna* following the negation is given in (12c):

(12) a. The teletubby gonna not sleep in there more. (2;8.5)
    b. I gonna not tip it over. (2;10.8)
    c. <Du> not gonna knock the tower. (2;10.8)

4.1.3. *Yes-no* questions

The third type of construction indicating that Emma is moving the finite main verb to a V2 position is *yes-no* questions. She productively applies both subject-auxiliary inversion (13a-b) and subject-copula inversion (13c-d):

(13) a. Can you find that in the bedroom? (2;7.14)
    b. Have <du> braided this? (2;8.5)
    c. Is it summer now? (2;8.17)
    d. Was I in Tenerife? (2;9.2)

In addition to this, however, she frequently inverts main verbs as well in *yes-no* questions. During the recording period, Emma produces 12 *yes-no* questions requiring *do*-insertion in adult American English. Out of these 12, she only inserts *do* in two of them, and only one of these two is correct (14a). The other one shows double tensing (14b). In the remaining 10, the main verb and the subject are inverted (15) (mostly with the main verb *have*; six of the ten):

(14) a. Didn't <du> take that?   (2;7.14)
     b. Does your chicken can come out of your egg?   (2;8.17)
(15) a. Drive daddy me to barnehage?   (2;7.14)
     b. Have I a skirt?[10]   (2;9.2)
     c. Need <du> any matpakke?   (2;9.23)

Only one instance of the verb *gonna* is attested in *yes-no* questions in the data, and it occurs in an inverted position:

(16) Gonna <du> build a fine tower that do you like?   (2;10.8)

As we saw in section 3.3., inversion of non-auxiliary verbs is virtually never attested in monolingual English-speaking children. Kuczaj & Maratsos (1983) also report that when children start producing subject-auxiliary inversion, only the verbs that can be inverted in the adult language are inverted in the children's speech. According to O'Grady (1997) structures such as (12a-b) and (16) are not found in monolingual English children. He claims that "[e]ven verbs such as *gotta* and *hafta*, which are semantically similar to the auxiliaries *must* and *should*, are not used by language learners in inversion patterns (...)" (p. 159).

Both *yes-no* questions and negations require *do*-insertion in adult English if the corresponding declarative clause only contains a main verb. Looking at the data from Emma, it seems that she has not yet fully acquired the operation of *do*-support. We see this in the low frequency of *do*-insertion in both constructions. Out of the twelve *yes-no* questions with a main verb she produced during the recording period, only two showed any

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[10]As Emma's parents speak American English, they do not use questions with a raised verb *have* as in (1):

(1) Have you got any money?

Hence, I doubt that Emma's questions such as (15b) are instances of questions lacking *got*:

(2) Have I *got* a skirt?

attempt of *do*-insertion (and only one succeeded). In Emma's negations, only three out of 25 utterances[11] exhibit *do*-insertion. Clearly, Emma has not yet acquired the intricate system of *do*-support in English.

4.2. Norwegian

V2 is fairly well established in Emma's Norwegian already before the data collection started. She consistently places the finite main verb in the second position in both unmarked main clauses, (17a) - (18a), as well as in main clauses with an adverbial (17b) or direct object (18b) topicalised:

(17) a. Vi kommer.   (2;9.25)
        we come
     "We are coming."
    b. Snart kommer vi.   (2;9.25)
       soon come   we
     "Soon we are coming."
(18) a. Vi glemte hesten.   (2;9.25)
       we forgot horse.DEF
     "We forgot the horse."
    b. Hesten   glemte vi.   (2;9.25)
       horse.DEF forgot we
     "The horse we forgot."

Only 3,4% of her topicalised main clauses occur with the finite main verb in the third position, as in (19), (in all of these utterances an adverbial has been topicalised).

(19) No   æ ordna det.   (2;7.10)
    now I fixed   it
   "Now I fixed it."

Emma's use of negation in Norwegian also indicates that she has acquired the V2 effects. During the recording period, she always places the finite verb in front of the negative element *ikke* 'not,' regardless of whether the verb is a modal auxiliary, copula *be*, or a main verb. (We found no instances of negated utterances with auxiliary *have* and a main verb in the data). This is illustrated in (20):

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[11]I have left out the 7 instances of negations with a raised main verb here, as *do*-support is not needed if the main verb is raised. The remaining 22 utterances show preverbal negation, i.e. the negative element *not* precedes the verbal element.

(20) a. Æ vil   ikke ha   den.   (2;7.21)
      I will not   have it
    "I don't want it."
   b. Den er ikke farlig.   (2;7.10)
      it   is not dangerous
    "It is not dangerous."
   c. Æ miste ikke hatten min.   (2;8.7)
      I lose   not hat.DEF my
    "I don't lose my hat."

Finally, *yes-no* questions do not constitute an area of problems in Norwegian for Emma. Both auxiliaries and main verbs are correctly inverted in all of her *yes-no* questions, as is illustrated in (21):

(21) a. Kan du ta   den ned?   (2;7.10)
      can you take that down
    "Can you take that down?"
   b. Er det der   en frosk?   (2;9.25)
      is that there a frog
    "Is that a frog?"
   c. Har dokker en fat?   (2;9.25)
      have you   a plate
    "Do you have a plate?"

Emma uses significantly more non-subject-initial clauses in Norwegian than in English (a total of 208 in Norwegian versus 77 in English). This asymmetry crucially mirrors the distributional patterns found in the respective adult languages. As Hasselgård et al. (1998:309) point out, "[i]n main clauses of declarative sentences, fronting is an infrequent option in English compared with Norwegian."

In the vast majority (93,5%) of Emma's non-subject-initial English clauses, an adverbial rather than the object is fronted. The same pattern is found in adult English. Although adverbials are topicalised more frequently than objects in Norwegian too, fronting of objects constitutes 21,2% of Emma's Norwegian topicalised structures. Again, this corresponds to what we find in the adult language. According to Hasselgård et al. (1998:309) "[f]ronting of non-subject noun phrases is far less common in English than in Norwegian." This shows that Emma in general distinguishes between English and Norwegian syntactically, rather than treating the two languages as having one fused syntactic system.

5. Discussion

In section 3.4. we pointed out that a potential conflict for the simultaneous acquisition of English and Norwegian was how to set the V2 parameter, i.e. whether to move the finite main verb out of the VP, or to leave it in situ. We proposed two (potentially contrasting) predictions concerning language mixing in bilingual children. Evidence from three different structures has indicated that Emma to a certain extent overgeneralises the V2 pattern from Norwegian into English. As these kinds of errors are usually not found in monolingual English children, it is fair to assume that they are caused by the fact that Emma is acquiring two languages simultaneously. Moreover, the errors reflect an option which involves a more costly operation than that found in the target language, viz. verb movement where it is not required. Thus, we claim that this is evidence of transfer of a less economical construction from Norwegian into English, and accordingly, Prediction 1 is not supported by the data.

As the notion of markedness cannot account for the transfer involved in Emma's placement of the finite main verb, we turn to the cue-based approach to language acquisition. The word order in English and Norwegian main declarative clauses is superficially the same, viz. subject–verb–object. From such constructions alone it is not possible to decide whether the finite main verb is in V or has moved to C. We will suggest here that Emma at the stage of the recordings is considering the possibility that all finite verbs move to C in main clauses in English as well as in Norwegian. The reason for this, we claim is that the cues for not moving the main verb in English are confusing and not strong enough in Emma's input to prevent her from trying out this option. Let us take a closer look at the cues.

Lightfoot (1999a, b) claims that the main cue in V2 languages for moving the main verb V-to-C is clauses with an initial non-subject. SpecIP is associated with subjecthood, thus an initial non-subject must be located in a position above IP, viz. SpecCP. As the initial element (be it a subject or not) is always followed by the finite verb in main clauses in a V2 language such as Norwegian, structures with an initial non-subject are clear indications of the finite verb having moved to C. An example of such a structure in Norwegian is given in (22), where the initial element is an adverbial of time:

(22) [$_{CP}$ I går   [$_{C}$ gikk$_i$] [$_{IP}$ hun [$_I$ t$_i$] [$_{VP}$ [$_V$ t$_i$] på kino]]]
      yesterday went   she   on cinema
      "Yesterday she went to the cinema."

In addition, Norwegian *yes-no* questions also provide cues for moving the finite verb to C. In these constructions, not only auxiliaries, but also main verbs undergo inversion. The position of the main verb preceding the subject *hun* indicates that it has to be moved to a position above IP, as in (23):

(23) [$_{CP}$ Kjente$_i$ [$_{IP}$ hun [$_I$ t$_i$] [$_{VP}$ [$_V$ t$_i$] mannen]]]
　　　 knew　　　 she　　　　　　 man.DEF
　　　 "Did she know the man?"

Thirdly, verb placement in negations also constitutes a cue for moving the main verb out of the VP. Assuming that negation is merged outside VP, a finite verb preceding the negative element *ikke* 'not' indicates verb movement out of VP, (24):

(24) [$_{CP}$ Hun$_j$ [$_C$ kjenner$_i$] [$_{IP}$ t$_j$ [$_I$ t$_i$] [$_{NegP}$ ikke [$_{VP}$ [$_V$ t$_i$] mannen]]]]
　　　 she　　 knows　　　　　　　　 not　　　　 man.DEF
　　　 "She does not know the man."

According to Lightfoot (1999a), a structure needs to be robust enough in the input to function as a cue for the language learner. He claims that the main cue structure for V2, viz. topicalised clauses, constitutes about 30% of the main clauses in V2 languages such as Norwegian, Swedish, German, and Dutch. As the other two structures (*yes-no* questions and negations) also occur relatively frequently in Norwegian, we assume that the cues for verb movement V-to-C in Norwegian are quite strong. This is also suggested by the early acquisition of this phenomenon by Norwegian-speaking children.

　　The English equivalent structures to (22)-(24), on the other hand, indicate that main verbs do not move out of VP. First, whereas topicalised constructions provide the main cues for verb movement in Norwegian, in English they function as the main cue for *not* moving the main verb to C. In these constructions the main verb follows the subject in English. Thus, the main verb cannot have moved to C here:

(25) [$_{IP}$ Yesterday [$_{IP}$ he saw you]]

Second, cues for leaving the main verb in the VP are also found in *yes-no* questions. If the question contains an auxiliary, this inverts with the subject in adult English, resulting in (26a). If, on the other hand, there is only a main verb in the question, *do*-insertion is required, as in (26b). In both

constructions, the main verb remains inside the VP. *Do*-insertion is also required in negated utterances, as illustrated in (27). The negative element preceding the main verb indicates that this verb is still in V:

(26) a. [$_{CP}$ Have$_i$ [$_{IP}$ you [$_I$ t$_i$] [$_{VP}$ t$_i$ [$_{VP}$ read his new book]]]]

   b. [$_{CP}$ Did$_i$ [$_{IP}$ you [$_I$ t$_i$] [$_{VP}$ see the new film]]]

(27) [$_{IP}$ He [$_I$ does] [$_{NegP}$ not [$_{VP}$ eat apples]]]

For monolingual English children these cues seem to be sufficient to prevent movement of main verbs from V to C.

However Hulk & van der Linden (1998) point out that bilingual children receive input that allows more syntactic possibilities than their monolingual peers do. They suggest that bilingual children actually have *too many* cues in the input, and thus conflicts arise. Concerning the acquisition of verb placement we suggest that infrequency/inconsistency and complexity of the cue structures plays a significant role.

We claim that the main cue structure for acquiring verb placement in English (i.e. topicalisations) does not occur frequently enough in the data for Emma to acquire this. Topicalised utterances are much more frequent in Norwegian than they are in English. Hence, the main cue for V2 in Norwegian is arguably stronger than the main cue for "main verbs stay in V" provided by English in the bilingual input. Further, the two additional cue structures for leaving the verb in V, *yes-no* questions and negations, first of all provide inconsistent cues, as copula *be* and auxiliaries can move out of the VP in these constructions. Secondly, they require *do*-insertion if the corresponding declarative clause contains a main verb only. As we saw in section 4.1.3., Emma has probably not fully acquired this operation yet. We therefore suggest that the inconsistency and complexity of these structures make them less available as cues for the [-V2] setting of the V2 parameter.

Again, this does not seem to cause problems for monolingual children acquiring English, but for Emma, receiving simultaneous input from Norwegian, this leads to occasional transfer of the V2 phenomenon from Norwegian into English. Unmarked declarative clauses with an SVO order, such as (2) above, may be analysed as V2 constructions in English. In the terms of Döpke (1998, 2000), the strong and consistent cues for verb movement in Norwegian enhance the verb movement patterns already found with English copula and auxiliaries. The result is that this movement pattern is temporarily overgeneralised to all kinds of finite verbs in English. Thus we found support for our Prediction 2 in the data.

6. A speculation on economy in language acquistion

Within the minimalist approach to syntax, economy is generally defined in terms of derivational cost. It has been suggested that language learners initially will favour the least costly, i.e. the unmarked derivations when acquiring a language (Clark & Roberts 1993, Platzack 1996, Roberts 1999). Following this idea we would assume that bilingual children faced with two alternative analyses would be more liable to transfer the less costly construction into the language with the more costly alternative than vice versa. However, as we have seen in Emma's acquisition of verb placement, structural markedness is not the major motivation behind language transfer.[12]

Henry & Tangney (1999) adopt an approach to language acquisition which takes both structural complexity and cues into consideration. According to them, "language acquisition involves tension between the drive to create a maximally simple grammar in Universal Grammar (UG) terms and the need to adopt a grammar that covers the input data" (p. 139). They interpret the minimalist account of parametric variation slightly differently from Platzack (1996) and Roberts (1999). Rather than assuming that weak features always represent the least complex setting, they claim that a consistent grammar is simpler than a grammar which contains inconsistent feature specifications for its functional heads. As a concrete example they suggest that a grammar in which all or no verbs raise to Agr_S is less complex than a grammar where some verbs raise to Agr_S and some verbs do not.

Viewed in isolation, English main declarative clauses are more economical than the Norwegian equivalents because the former only exhibits movement at LF. However, in constructions where *do*-support is required in the visible to check features in I, this kind of operation is arguably more costly than moving the main verb overtly to C to check the strong features there found in Norwegian. (*do*-insertion is traditionally analysed as a Last Resort operation (cf. Chomsky 1995)). As Emma has not yet fully acquired this operation (and this is an operation that is generally acquired later than V2 effects in children acquiring a V2 language), it is

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[12] Some studies on transfer in bilingual children have suggested that language dominance determines the direction of the transfer (cf. Petersen 1988, Lanza 1992). However, in the current data this clearly is not the case. First of all, Emma is a fairly balanced bilingual, although with a slight dominance in Norwegian. Secondly, as shown in Bentzen (2000), in the acquisition of DPs, she exhibits systemic language transfer from English into Norwegian. This suggests that the notion of language dominance is not the main force behind Emma's systemic language transfer.

perhaps not so surprising that Emma tries out the hypothesis that C is strong in English to avoid the complexities of *do*-support.

Adding to the potential confusion regarding verb placement is the fact that auxiliary *have* and copula *be* in English behave like both main verbs and auxiliaries in Norwegian, and thus may raise out of the VP in both *yes-no* questions and negations.

Following Henry & Tangney (1999), the Norwegian system of verb placement is arguably *more* economical than the English one, as *all* finite verbs move out of VP in the overt syntax in Norwegian, whereas only auxiliaries and the copula move overtly in English. It is thus likely that from Emma's point of view the cues for leaving the main verb in V are not overwhelmingly strong in English.

Our Prediction 2 indicates that both frequency and consistency of cues as well as structural complexity influence the process of language acquisition. In the case of Emma, we suggest that the *interaction* of cues and structural complexity in the bilingual input is the source of the transfer involved in her language development. Based on Henry & Tangney (1999) we will therefore propose an alternative account of the notion of economy in language acquisition. They claim that "the child selects from the options made available by UG the least marked grammar *that is consistent with much of the input*"[13] (p. 251). We suggest here that from a child's point of view, the cost of a derivation is not only based on its structural complexity, but also on how compatible this derivation is with the cues in the input. We further suggest that children will prefer consistency over low cost derivations if cues in the input leave open both possibilities. This is particularly interesting in the case of bilingual children, as they receive a much wider range of input than monolingual children do. Although we do not want to argue that bilingual children in general are trying to fuse the two grammars in the input into one, there seems to be a tendency to seek some kind of consistency (cf. Döpke 1997, 1998, Müller 1998).

Summing up, our Prediction 1 was rejected by the data, as Emma transfers the more marked parameter setting (+V2) into the language with the unmarked setting (SVO). Rather, we found support for our Prediction 2 as both the low frequency and the relative complexity of the cue structures affect their function as cues for acquisition. Hence, we suggest that the nature of the cues is more influential in the acquisition of verb placement than the structural markedness of a construction viewed in isolation. The cues Emma picks up from the bilingual input (temporarily) prevent her from consistently assigning the correct (unmarked) parameter setting to

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[13]My emphasis.

English main verbs, viz. remain in V. She therefore optionally transfers the strong features of C (i.e. the marked alternative) from Norwegian into English because of the unclear nature of the English input when combined with input from Norwegian.

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