THE ACQUISITION OF VERBAL MORPHOLOGY BY YOUNG SECOND LANGUAGE LEARNERS IN A MULTILINGUAL EDUCATIONAL CONTEXT

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1. Introduction

This paper reports on an ongoing study investigating how children become bilingual by acquiring a second language (L2) in an educational context. The specific educational context under investigation here is that of the European Schools (Baetens Beardsmore, 1995). These schools have gained a solid reputation as successful institutions of multilingual and multicultural education and they are increasingly turned to as a model for designing bilingual education programmes elsewhere (cf. Skutnabb-Kangas, 1995). However, there has been surprisingly little empirical research on the process of (second) language learning in these schools, which is in sharp contrast to some other models of bilingual education (e.g. Canadian immersion education).

The main motivation for this study, however, is of a “theoretical” rather than “applied” nature. Its aim is, first, to longitudinally describe what is variable and invariable in the route, the rate and the outcome of the process of second language acquisition (SLA) by pre-adolescents language learners who receive most of their exposure to the target language (TL) in an educational setting. This may well become the dominant type of SLA in the years to come, particularly in Europe. Until recently, however, SLA research has tended to concentrate on adolescent and adult learners in mainly naturalistic environments (e.g. Perdue, 1993). In a second step, the aim of the study is to explain the children’s learning process in terms of underlying principles and mechanisms of language acquisition.

The specific domain of language focused upon is temporality, or the expression of temporal notions in language. All language learners must learn to identify and encode the relevant temporal categories of their TL. For many languages the development of grammatical temporality –the categories of tense and aspect– belongs to the core of the acquisition process. Mapping the relevant temporal meanings of the TL onto the appropriate morphosyntactic forms constitutes one of the learner's major and most challenging learning task given the lack of isomorphy between form and meaning/function in this domain of language (Bardovi-Harlig, 1992).

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2. Subjects, data and methodological procedures

The findings reported in the present paper come from analyses of oral production data collected during five interview sessions with three Dutch-speaking and three French-speaking primary school pupils learning English as a second language in the European Schools of Brussels and Mol (Belgium). The classroom was the principal source of contact with English for all subjects although some had additional contact, mainly through their family background or with other pupils at school. The interviews were conducted at six-month intervals, starting when the pupils were in the third grade of primary school (age 8+) and had had two and a half years of about 45 minutes of English a day. Their progress in English was tracked over a period of nearly three years (i.e. until the end of primary schooling).

The interviews consisted of both informal free conversation and semi-guided speech tasks, including picture descriptions and story (re)tellings. The pupils’ utterances were recorded and subsequently transcribed, segmented into clausal units and coded in CHAT format (cf. Macwhinney, 1995). The corpus contains more than 20,000 learner clauses, with an average of 700 clauses per learner per interview session.

To investigate how the pupils learn to mark tense and aspect, each finite clause was coded in terms of the morphological verb forms used and in terms of the tense, aspect, and inherent aspectual meanings expressed. Tense refers to how a speaker locates a situation (i.e. an action, event, process, state of affairs) in relation to a reference time which is in turn related to the time of speaking. Aspect is not concerned with relating a situation in time but with the internal temporal constituency of a situation; i.e. whether it is seen as one whole or rather as having a beginning, middle, and/or terminal phase. For example, the difference between *I am thinking about the answer* and *I was thinking about the answer* is one of tense while the difference between *I was thinking about the answer* and *I thought about the answer* is one of aspect. Inherent aspect refers to a set of properties that define the very nature of a given situation such as, for instance, whether it is durative or punctual (e.g. *to think about the answer* vs. *to find the answer*), dynamic or stative (e.g. *to think about the answer* vs. *to know the answer*) or telic or atelic (i.e. whether it has a clear inherent end point or not; e.g. *to think about the answer* vs. *to formulate the answer*). Tense and aspect meanings are expressed through verb morphology whereas the expression of inherent aspect is a matter of lexical choice (at least in English). Unfortunately there is no space here for a detailed discussion of the analytic framework that must underlie the investigation of temporal systems in interlanguage data. Suffice it to say that the analytic categories and procedures used in this
study are phrased in language-independent terms and draw on the work available by scholars since Reichenbach (1947) and Vendler (1957), including Comrie (1976, 1985) and Klein (1994). (For more details, cf. Housen, 1995, in press,a).

The next section summarizes the general empirical findings that came out of this study. Sections 4 and 5 discuss theoretical interpretations and explanations of these findings.

3. Stages in the development of verb morphology
The development of verb morphology, as it emerged from the data, proceeds in four general stages (for a more detailed account, cf. Housen, in press, b):

3.1. Stage 1: In the earliest stages of acquisition, verbs are either missing (cf. (1)) or they appear as unproductive and unanalysed chunks in formulaic expressions (cf. (2)).

(1) I uh Spain (= ‘I went to Spain’)
(2) I don’t know

3.2. Stage 2: Productive verbs appear in a second stage as unique, invariant forms. These are typically unmarked base forms (V₀) like want and eat but also morphologically marked forms can be observed, particularly highly frequent suppletives and irregular forms (Ven) like was and got and even present participles (Ving) like going.

These forms are used invariably in all contexts, regardless of the intended or required tense, aspect or agreement values. They function as default forms and only express the lexico-semantic content of the verb (cf. (3)).

(3) In summer I go in France ... now not ... now we go in Spain ... mais my father no ... he go in Amérique... his mother live in the Amérique

3.3. Stage 3: The onset of morphological variation marks the third stage of development. The first morphological variants to appear in these English data are the -ing form and, roughly at the same time, irregular Preterit/Past Participle forms (Ven). Regular Preterit forms (Ved) appear later and are followed by analytic Perfect-like forms (with auxiliary have+V) and the Simple Present Vs form (although there is considerable individual variability with respect to order of emergence of these last two categories; with some learners they appeared before the regular -ed forms). Other analytic and periphrastic forms are late developments. The narrative under (4) is representative of this third developmental stage.

(4) and then I was going again on the springboard... and so I want uh jump... but my
mother say I must not do it because it is very high… and she saying I must going uh [down] … but I say “please please mummy I want jump”.

These early morphological variants are not yet functional for encoding tense or aspect meanings since they appear in either free variation or in complementary distribution with the default form of the verb. New morphological categories are initially often underextended; that is, morphemes like -ing, -s and -ed first appear with some verbs only, or in only some of the full range of contexts where they appear in TL usage. This skewed distributional bias is indicative of the learner’s tendency to hypothesize restricted form-meaning mappings. I will return to this issue below.

3.4. Stage 4: The strong distributional bias which characterizes the use of morphological categories in stage 3 is gradually relaxed as the form-meaning mappings are modified and extended until, ultimately, they assume the grammatical values of the TL. In the course of this process a difference can be observed between the -ing form on the one hand and past and perfect tense forms on the other hand. The -ing form tends to go through a stage of overextended usage; that is, at some stage, the -ing morpheme is used indiscriminately in both imperfective and perfective contexts and with verbs which do not easily allow for the -ing form in English (cf. examples (9) and (18) to (21) in 4.2.1.). In contrast, past and perfect tense morphemes (e.g. -ed and analytic constructions with auxiliary have) do not show such overextended usage –when learners produce Preterit and Perfect-like form such as was, worked or have see, they almost invariably do so in a target language-like way to refer to a situation or event in the past or anterior time. These forms are hardly ever overused in, for instance, contexts with a clear present or future time reference. This issue will also be picked up again in more detail below.

3.5. Conclusion

Progress along the path of development sketched here is slow and four of the six subjects do not acquire any functional verb morphology by the end of the observation period, which is after five years of nearly daily (classroom) exposure to English. And the two subjects who did reach the final stage of development had only acquired a minimal tense-aspect system. The only temporal meanings which they could more or less consistently mark are imperfective/progressive aspect (through -ing) plus the general tense notion of ‘anteriority’ (through Preterit and Perfect morphology). They had not yet learned to distinguish between absolute anteriority (or simple past) and relative anteriority (or perfect). This is shown in the
utterances in (5) and (6) where the learner uses a Perfect form to encode both absolute past tense (5) as well as relative present anteriority (6):

(5)  uh you mean ... what I have done yesterday?
(6)  Oh yes I have done it many time.

4. Theoretical explanations

The developmental pattern for the acquisition of verbal morphology observed in the present study is congruent –at least in outline– with those observed in other studies involving older L2-learners from different first language backgrounds, learning different target languages in different learning contexts (Dietrich et al., 1995). Similar patterns have also been observed in first language acquisition (Fletcher & Garman, 1986). Such similarities have been taken as evidence for the operation of universal mechanisms of language development. Several proposals have been made in recent years as to the nature of these universal mechanisms.

4.1. Semantic-conceptual pacesetting

According to one influential hypothesis, learners are guided in this particular form-meaning mapping task by their perceptual-conceptual disposition to mark primitive universal properties of situations. These universal properties are said to be aspectual in nature. They find their primary linguistic expression in the inherent lexical meaning of verbs or verbal predicates and are usually defined in terms of Vendler’s (1967) model of verb semantics (cf. the upper row in table 1 and section 2). Briefly, this model distinguishes four predicate types (states, activities, accomplishments and achievements) depending on whether the predicate denotes a situation which is stative or dynamic, punctual or durative, and telic or atelic (cf. section 2). Learners would be predisposed to mark such universal inherent aspectual distinctions and use these as a starting point for inferring the specific yet ontologically related grammatical aspect and tense distinctions of their TL.

There are various versions of this semantic-conceptual pacesetting hypothesis, and various labels for it, such as Defective Tense Hypothesis (Weist et al., 1984) and Primacy of Aspect Hypothesis (Robison, 1990). The concrete claim for the acquisition of English is that learners first associate and use the imperfective aspect marker -ing with prototypical atelic-durative predicates (i.e. activities) like work and laugh. Past and perfect tense markers would initially be mainly associated and restricted to telic-punctual predicates (i.e. achievements) like stop and drop. In subsequent stages, learners would progressively extend their use of these
markers to other predicate types, following a systematic pattern of semantic diffusion as shown in table 1.

Table 1. Predicted emergence and spread of early verb morphology across inherent aspectual predicate types.

<table>
<thead>
<tr>
<th>Imperfective aspect marker (e.g. -ing)</th>
<th>Past/Anterior tense marker (e.g. -ed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>states</td>
<td>activities</td>
</tr>
<tr>
<td>- dynamic</td>
<td>+ dynamic</td>
</tr>
<tr>
<td>- telic</td>
<td>- telic</td>
</tr>
<tr>
<td>- punctual</td>
<td>- punctual</td>
</tr>
<tr>
<td>(live, want)</td>
<td>(work, laugh)</td>
</tr>
<tr>
<td>0</td>
<td>V</td>
</tr>
<tr>
<td>1</td>
<td>V</td>
</tr>
<tr>
<td>2</td>
<td>V-ing</td>
</tr>
<tr>
<td>3</td>
<td>V-ing</td>
</tr>
<tr>
<td>4</td>
<td>(V-ing)</td>
</tr>
</tbody>
</table>

These predictions were tested against the data of the European School pupils through a distributional analysis of their early verb morphemes (i.e. -ing, -ed, irregular preterit and participle morphology, and Have+V forms). Section 4 presents the results of this analysis. The general trends which emerged will be illustrated with the representative data from Ema, one of the Dutch-speaking learners. Her interlanguage development showed the greatest progression over the observation period and her data therefore offer a good view of the developmental processes at work.

4.2. Results

4.2.1. Imperfective aspect morphology (-ing)

The five graphs in figures (1a) to (1e) show the distribution of -ing forms across the four semantic verb classes in each of the five interviews with Ema. Examples (7) to (21) illustrate the relevant trends.

In the first two interviews with this learner, -ing redundantly marks inherent atelic-dynamic-durative aspect as reflected in the strong bias towards activity predicates like dancing, and fighting (cf. (7) to (9)). However, this bias is not – or perhaps no longer – absolute. Also telic-dynamic-durative predicates (accomplishments) attract the -ing marker, though less strongly so than the activity verbs. At this stage, -ing is also over-generalized to contexts that do not readily allow for an imperfective reading. An example in case is the utterance in (9) below, which is part of a narrative. The utterance preceding (9) in the narrative expressed that a man fell into the water, at the sight of which several bystanders...
began to laugh. This situation typically calls for perfective rather than imperfective marking (cf. and the people start/started to laugh rather than and the people are/were laughing).

Note that state and achievement predicates tend to remain unmarked at this stage, whether the context is perfective or imperfective (cf. 11-14).

(7) she’s dancing. [activ.]
(8) the boy uh fighting. [activ.]
(9) and the people is laughing. [activ.]
(10) he’s going to the car. [accompl.]
(11) I want a red uh sweet. [state]
(12) she see the boy. [state]
(13) he fall uh for the dog. [achiev.]
(14) the man take the watch. [achiev.]

Fig 1. Distribution of –ing across inherent semantic aspect classes.
After the second interview, the strong bias of \textit{-ing} towards dynamic-durative predicates gradually relaxes as it extends to punctual predicates (achievements) and stative predicates (states) (cf. (15) - (21)). From this moment onwards then, the use of \textit{-ing} becomes increasingly more independent from inherent aspect and, as such, increasingly functional as a marker of imperfective aspect. This trend is particular clear in the third and fourth interview sessions (cf. figures lc and 1d).

(15) the eggs falling. [achiev.]
(16) the car is \textit{crashing}. [achiev.]
(17) the man is \textit{standing} uh here? [state]
(18) because it was just \textit{seeming} fantastic. [state]
(19) and then the king and queen were \textit{wering} angry. [state]
(20) I wasn't \textit{knowing} that. [state]
(21) and then the bull was \textit{wanting} to run after him. [state]

This particular learner used the \textit{-ing} form lavishly and even overgeneralized it to highly stative predicates with verbs such as \textit{know}, \textit{want}, and \textit{be}, as in examples (18) to (21). By the time of the fifth interview, however, Ema seemed to have acquired the specific restrictions on the semantic scope of the English \textit{-ing} form and she no longer used it with these highly stative verbs of cognition and perception. Note that these restrictions are probably not universally given; they have to be inferred from the input language.

4.2.2. Past/Perfect morphology

In contrast, the emergence, initial use and subsequent development of past and perfect tense markers, do not show the predicted link with the inherent aspect of the predicate, as shown in examples (22) to (30) and in the graphs in figure 2. From the start, Preterit and
Perfect morphology appears with all predicate types—including states like *had* and *saw* (cf. (28)-(31))—instead of being restricted to inherently punctual-telic achievement predicates as predicted by the *Primacy of Aspect Hypothesis*.

(22) I have fallen. [achiev.]
(23) I forgot it. [achiev.]
(24) and he lost the uh thing. [achiev.]
(25) she died. [achiev.]
(26) he opened the <doos> [=box]. [achiev.]
(27) the girl have see it. [state]
(28) but the other boy saw this. [state]
(29) I had three B’s. [state]
(30) first I felt nothing. [state]

Fig. 2. Distribution of marked (Preterit, Perfect) and unmarked verb forms across inherent semantic aspect classes.
4.3. Summary

The predictions of the semantic-conceptual pacesetting hypothesis are only partly borne out by the results of our analyses. Strongest support is provided by the development of the aspect morpheme -ing, which shows a significant link with the inherent aspectual semantics of the verbal predicate. In contrast, the development of preterit and perfect morphology does not show such a link.

This finding may well be related to the other difference between these two classes of morphemes mentioned in section 3.4., namely that the development of -ing typically goes through a stage of overextended usage before target-like usage sets in whereas Preterit/Perfect morphology does not show such overextended usage.

A close link between -ing and inherent aspect implies that learners will primarily interpret and use -ing as a marker of progressively broader universal semantic categories (i.e. from dynamic-durative-atelic > +telic > +punctual > +stative), regardless of any TL-specific grammatical meanings (e.g. progressivity) that can be assigned to the situation denoted, and regardless of any TL-specific restrictions on the semantic scope of the morpheme (i.e. highly stative verbs of perception and cognition). This would explain why, from the perspective of standard native English, learners of English are prone to overgeneralize the -ing morpheme.

In contrast, the use and development of Preterit and Perfect morphology seems less dependent on the inherent aspectual character of the situation denoted. And as we have seen, Preterit and Perfect morphology, though initially underextended in past and perfect tense contexts, is rarely overextended to present or future time contexts. This suggests that the learners can use these forms with their broad target semantics (i.e. anteriority) from the start,
without first using them redundantly as markers of inherent aspectual properties of the predicate.

5. Discussion

The above findings and interpretations, if correct, raise the question as to why English aspectual morphology displays the predicted link with inherent verb semantics whereas anterior tense morphology does not. Two plausible yet conjectural answers will be advanced below.

5.1. A first possible explanation draws on the distinction between lexical-associative mechanisms versus morphological-rule-based mechanisms that are said to operate in the acquisition and use of grammatical morphology (Pinker & Prince, 1992). Lexical learning involves a direct mapping between a particular linguistic form (e.g. the word *went*) and a particular perceptual-conceptual scene (e.g. movement in a direction), which is then stored as a whole in associative memory. Lexical learning is particularly susceptible to input properties such as the frequency of occurrence and the perceptual saliency of linguistic forms in the linguistic input. Morphological rule learning on the other hand involves the abstraction of a general, grammatical concept (e.g. pastness, ongoingness) which is mapped onto a specific morphophonemic shape (e.g. *-ed*, *-ing*) and stored as a generalization (or ‘rule’). This process of morphological rule learning involves, amongst other things, the metaphorical extension of prototypical perceptual-conceptual scenes which are represented in terms of such primitive properties as dynamicity, telicity and durativity (Andersen & Shirai, 1994; Taylor, 1989; Givón, 1989). It is my contention that the acquisition and use of irregular inflectional morphology (e.g. *went*, *saw*, *got*, *was*) relies primarily (though not exclusively) on lexical-associative processes while the development of regular inflectional morphology (e.g. *-ing*, *-ed*) primarily (though again not exclusively) involves productive morphological rule learning mechanisms. (The status of analytic morphological categories is less clear in this respect).

However, by following the procedures of previous studies, this study has treated Preterit and Perfect morphology as a uniform category. This may be warranted from the semantic perspective of the Primacy of Aspect hypothesis though not necessarily from a psycholinguistic processing point of view. English Preterit and Perfect morphology represents a composite class consisting of different types of morphological categories (regular V-*ed*, irregular V-*en* and periphrastic *Aux.have +V*) which may well differ in terms of the psycholinguistic mechanisms that operate in their acquisition and use. More specifically, in the view proposed here, semantic universals like dynamicity, telicity and durativity would
play a role in the development of regular inflectional morphology like -ing and also -ed but not or less so in the acquisition of irregular forms. Therefore, collapsing regular and irregular past and perfect tense morphology into one category may have obscured a possible link between the development of the regular morpheme -ed and the inherent aspectual semantics of the predicate. A reanalysis of the data along the lines of this scenario is currently under way. Preliminary findings suggest that the Preterit and Perfect forms which occur with stative predicates, thus contradicting the Primacy of Aspect hypothesis, mainly involve irregular V-en forms (e.g. had, saw). Consequently, a stronger association might have been observed between Preterit-Perfect morphology and inherent punctual-telic aspect if the analysis had been restricted to productive regular morphological markers only (i.e. V-ed). (In fact, something to this effect is suggested by figures 2a and 2b which show a high concentration of -ed with achievement verbs. However, not enough tokens could be withheld to determine whether this is a significant trend).

5.2. A second, alternative explanation for the different behaviour of early tense and aspect markers in the L2-acquisition of English—and one which is not incompatible with the first—draws on the notion of transfer. In this view, L2-learners will come to the acquisition of the morphological system of their TL predisposed by the basic meanings of the major morphological oppositions in their L1 so that they will look in the input language for a similar system. If they find one, they will use this as a basis for their reconstruction of the TL system. If they find none, they will try to construct one with the help of universal semantic prototypes. In other words, the learner will resort to perceptual-conceptual universals when he encounters form-function relations in the input language which have no obvious counterpart in his L1.

Applying this to the current case would mean that the Francophone and the Dutch-speaking learners in this study both came to the acquisition task in the expectation that their TL English makes a primary distinction between ‘anterior’ versus ‘non-anterior’ time because this is also what happens in their respective L1s. Their expectations being met to some extent, the learners were drawn to analyze and use the Preterit and Perfect forms mainly in terms of this anterior/non-anterior contrast. This would also explain why the informants hardly ever overextended these forms to present or future contexts in their own output.

However, although the learners quickly figured out the main lines of grammatical tense in English, they found it much harder to sort out the structural and semantic distinctions that hold in the subdomain of anteriority in their TL. And this for various reasons. For instance, the fact that English, unlike French and Dutch, distinguishes between absolute and relative anteriority and the ensuing semantic and distributional discrepancies between the
English vs. the French and Dutch Perfect and Preterit paradigms, the irregularity of the *Ven* paradigm, the phonetically subdued nature of the regular Preterit paradigm,… all these factors may have delayed the acquisition of the grammatical distinction between simple past vs. perfect tense.

The aspect marker *-ing* seems to have been processed in a different way. The learners in this study may not have been prepared for their TL to mark aspect distinctions to the same extent as they were prepared for the marking of tense distinctions. In their respective L1s, grammatical aspect is either absent (Dutch) or is a minor system only (French). Hence, these learners had no clear L1-based framework available within which to interpret the formal distinction between the ‘simple’ and the *-ing* forms which they encountered in the input. They therefore analyzed the *-ing* morpheme in terms of universal prototype meanings first, interpreting it as a marker of the inherent dynamic-atelic-durative nature of the verb, before gradually sorting out its targetlike values (e.g. through metaphorical inferencing).

**6. Final remarks**

The description of the development of verb morphology in English-L2 by primary school children in a bilingual educational programme presented in this paper is obviously quite limited and somewhat simplified. Much work is to be done to empirically evaluate the theoretical explanations proposed here. Still, the findings suggest that even for relatively young children in an environment conducive to language learning, the acquisition of verbal morphology is a slow and complex process which follows a route similar to that observed for older learners in naturalistic language learning contexts. Attempts to explain this process point to a complex interaction between general mechanisms of language processing, universal perceptual-conceptual predispositions, L1-based predispositions and the tendencies of the TL.

The theoretical scenarios proposed here are in line with perception-conception-based theories of contact-induced language development and change, of which also pidginization and creolization form part. The basic tenet is that in contact-induced language change from which a new language develops, the grammar of the new language is initially taken of whatever overlaps in the grammars of the languages in contact. If the contact languages do not overlap in the expression of some domain of grammar, then speakers resort to universal tendencies, which are perception-conception-based (cf. Thomason & Kaufman, 1988). A similar principle then, seems to hold for SLA and interlanguage development.
7. References


Fletcher, P., M. Garman (eds.) (1986), Language Acquisition, Cambridge, CUP.


