

The Mapping Problem and Missing Surface Inflection in Turkish-German Interlanguage

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1. Introduction

In recent SLA research on variable use of morphology among L2 learners, two sides have diverged on the issue of the primacy of syntax or morphology in the developmental sequence of interlanguage grammars. White (2003) discusses these two views in detail, comparing those analyses which assume a close relationship between the acquisition of target-like inflectional morphology and syntactic structure, and those which make the opposite claim that abstract morphosyntactic features may be represented in L2 grammars in the absence of overt morphology. Proponents of the first view, like Vainikka and Young-Scholten (1994, 1996, 1998) and Eubank (1993/1994, 1996), claim that variable use of inflectional morphology is the result of some kind of impairment in acquiring syntactic properties like feature strength values or limited access to functional categories.¹ On the other hand, proponents of the opposite view, such as Haznedar and Schwartz (1997), Prévost and White (2000), Haznedar (2003), and White (2003), attempt to find support for the so-called “Missing Surface Inflection Hypothesis,” claiming that L2 learners acquire abstract syntactic structure early, while the acquisition of target-like inflection is simply missing and lags behind. Presumably, according to this second view, learners are faced with what Lardiere (2000) calls a “Mapping Problem” as they gradually identify the correspondences between abstract syntactic properties and overt inflectional morphology.

In the following paper, I revisit the predictions of the Missing Surface Inflection Hypothesis (MSIH) and address the general question of what causes the Mapping Problem in the first place. Data from a longitudinal study of spontaneous production data of a Turkish-speaking adult L2 learner of German confirm that the MSIH is on the right track. However, two types of recurring examples in the corpus seem to lend support to competing theories from Eubank (1993/1994) and Vainikka and Young-Scholten (1994, 1998). Although sentences with null-auxiliaries and others with infinitival forms in embedded clauses seem to be problematic for the MSIH at first glance, I propose explanations for each set of examples that, in turn, shed light on the cause and nature of the Mapping Problem. In particular, I propose that L1 transfer plays a significant role in blocking the mapping process and that phonologically empty verb forms are viable alternatives to overt forms in mapping between abstract and surface verbal inflection. In the conclusion of the paper, I discuss the implications of these proposals for the future application of Distributed Morphology (Halle and Marantz 1993) in analyses of morphological variability in L2 acquisition research.

2. Background: Verbal Inflection in Turkish and German

2.1 Agreement Inflection in Turkish and German

In main clauses, Turkish follows the canonical SOV word order with the agglutinating verb in final position, as in example (1):

- (1) Ben bu makale + yi yarın bitir + eceğ + im (Kornfilt 1990:632)
I this article + acc + tomorrow finish + fut + 1sg
'I will finish this article tomorrow'

¹ See Haznedar (2003) or White (2003) for a recent overview of these analyses as they relate to the topic of morphological variability.

The finite verb in main clauses is marked with “verbal agreement” for person and number according to the following distinctions: 1sg (-Im), 2sg (-sIn), 3sg (-Ø), 1pl (-Iz), 2pl (-sInIz), 3pl (lAr). Finite verbs in embedded clauses in Turkish, on the other hand, exhibit a different array of inflectional markers than they do in main clauses. Because predicates in embedded clauses are nominalized and function as gerundive complements, finite verbs in embedded clauses like (2) are identified by the gerundive suffixes *-(y)EcEg* or *-DIg* and by the “nominal agreement” inflection for person and number: 1sg (-(I)m), 2sg (-(I)n), 3sg (-(s)I(n)), 1pl (-(I)mIz), 2pl (-(I)nIz), 3pl (-lArI(n)):

- (2) Herkes [(biz + im) heykel + i kır + diğ + **imiz**] + 1 bil + iyor
 everybody we +gen. statue + acc break + ger.+ 1pl + acc know + 3 sg.
 ‘Everybody knows that we broke the statue.’ (Kornfilt 190:633)

Much like Turkish, German has relatively rich subject-verb agreement inflection for person and number: 1sg (-e), 2sg (-st), 3sg (-t), 1pl (-en), 2pl (-(e)t), 3pl (-en).² However, unlike Turkish, German has only one set of agreement markers for all clause types, as examples with a main clause (3a) and an embedded clause (3b) indicate:

- (3) a. Fritz schreibt heute den Brief.
 Fritz writes+3sg today the letter
 ‘Fritz is writing the letter today.’
 b. . . . dass Fritz heute den Brief schreibt
 that Fritz today the letter writes+3sg
 ‘that Fritz is writing the letter today’

Because the infinitive marker is *-en*, all 1pl and 3pl forms are homophonous with the infinitival form in German.

2.1 Finiteness in German

Following Prévost and White (1999, 2000), I identify obligatory finite and non-finite contexts in German in order to evaluate the distribution of inflected and uninflected verb forms. For example, non-finite contexts in German include clauses with an auxiliary verb and a past participle, as in (4), as well as sentences with a modal verb and an infinitive, as in (5):

- (4) Der Mann hat den Brief nicht **geschrieben**
 The man has the letter not written- PARTICIPLE
 ‘The man hasn’t written the letter.’
 (5) Der Mann muss den Brief heute **lesen**
 The man must the letter today read-INF
 ‘The man has to read the letter today’

Obligatory finite contexts in German, on the other hand, include examples with CPs, like an embedded clause like (6) with an overt complementizer, examples with yes/no questions like (7), or clauses with sentential negation like (8):

² Modal verbs in German have fewer distinctive inflectional forms than regular verbs which follow this pattern, and the verb *sein* (‘be’) is also irregular. These differences will be taken in to account below in the analysis of accuracy of inflectional forms.

- (6) Wenn der Mann den Brief endlich schreibt,
 if the man the letter finally writes+3sg
 ‘When the man finally gets around to writing the letter,’
- (7) Schreibst du heute den Brief?
 write+2sg you today the letter
 ‘Are you going to write the letter today?’
- (8) Ich schreibe den Brief nicht.
 I write+1sg the letter not
 ‘I’m not going to write the letter.’

I follow the traditional analysis of den Besten (1983) and assume that IP and VP are head-final in German, and I assume that the finite verb in main clauses like (8) moves to a position outside the VP to the left of sentential negation.

3. The Study

3.1 *The Subject and Data Collection*

The transcripts used in this study were provided by the European Science Foundation’s project on L2 acquisition by adult immigrants (Perdue 1984, 1993). They consist of twenty interviews with Ilhami (a pseudonym) which were conducted in Germany between July 1982 and December 1985.³ The format of the interviews varies from general conversations about biographical information to freely structured conversations with role playing or retelling the plot of silent films. The time between interviews varies from two to eight months over the entire period under investigation (42 months).

Ilhami is a monolingual Turkish native speaker who arrived in Germany in July 1981 at the age of 16. The first interview was conducted 12 months after his arrival. Although he had no prior exposure to German before his arrival, Ilhami received 12 months of formal language instruction for 10 hours a week before the first interview. Both German and Turkish were spoken at his place of employment, whereas only Turkish was spoken at home. The interviewers take note that Ilhami had “little speaking and listening abilities,” and that the intensity of his contact with the target language was described as “very infrequent and superficial” (May 1982; 10 months).⁴

In analyzing these transcripts, I included all utterances that contain a verb and two or more non-verbal constituents. The dataset includes declarative main clauses, embedded clauses, yes/no questions and wh-questions. All together, there are 650 tokens.

3.2 *Empirical Results*

3.2.1 *Accuracy of Verb Endings*

Because the transcripts provide basic information on Ilhami’s pronunciation, it is possible to discern quite accurately the verbal ending used in each sentence. Following Poeppel and Wexler (1993) and Prévost and White (2000), I analyzed each sentence according to whether or not the inflectional verb form appropriately matched the number and person features of the subject in its clause. In addition, I excluded all examples of verb forms that are homophonous with the infinitival form. The differences in accuracy between modal verbs, forms of *sein* (‘be’) in the present and past tense, and regular verb forms are presented in Table 1:

³ The Appendix includes a list of the dates of interviews and a breakdown of these dates into three general stages of development.

⁴ Examples from the corpus will be cited with the month and year of transcript as well as the time (in months) after Ilhami’s arrival in Germany.

Table 1: Accuracy of Verb Endings (excluding homophonous forms)

	Correct	Incorrect	TOTALS
Regular Verbs			
1sg <i>-e</i>	107	22	107/129 (82.9%)
2sg <i>-st</i>	11	2	11/13 (84.6%)
3sg <i>-t</i>	227	15	227/242 (93.8%)
sein			
1sg (<i>bin</i>)	13	0	13/13 (100%)
2sg (<i>bist</i>)	1	0	1/1 (100%)
3sg (<i>ist</i>)	1	0	1/1 (100%)
3pl (<i>sind</i>)	3	0	3/3 (100%)
1sg past (<i>war</i>)	11	0	11/11 (100%)
3sg past (<i>war</i>)	3	0	3/3 (100%)
Modals			
1sg (kann, muss, will)	29	1	29/30 (96.7%)
2sg (kannst, musst, willst)	7	0	7/7 (100%)
3sg (kann, muss, will)	45	2	45/47 (95.7%)

Although there is a slightly higher number of incorrect forms among regular verbs in first person, Ilhami's use of inflectional endings is very accurate. One of the few examples in which the subject (3sg) of the sentence does not correspond to the inflectional ending of the verb (2sg) is (9):

- (9) wenn man in Deutschland **lebst** (September 1984; 38 months)
 when one (3sg) in Germany live+2sg
 'when one lives in Germany'

In general, however, there is only a small number of such feature clashes in person (i.e., 3 person \neq 2 person) or number features in Ilhami's spontaneous production data.

Thus, one of the predictions of the MSIH is borne out: when agreement morphology is present, it is accurate. As in Prévost and White's (2000) study of L2 French and L2 German, Ilhami's errors consist of overuse of uninflected forms in finite contexts – not errors in which person and number features of the verb clash with those of the subject. Agreement is in place in Ilhami's interlanguage grammar. Although he makes errors in some forms, these errors are consistent with the predictions of the MSIH.

3.2.2 Finiteness vs. Non-finiteness

The second aspect of morphological variation analyzed in Ilhami's production data is the use of finite and non-finite verbs in obligatory finite and non-finite contexts. As Table 2 indicates, only a small portion (5.3%) of the examples contain a finite verb in a position where a non-finite verb is expected:

Table 2: Use of finite verbs in non-finite contexts

	+ finite	- finite	TOTAL (finite verbs)
verb forms in non-finite contexts (V+V, Aux + V)	14	250	14/264 (5.3%)

In other words, 95% of the examples follow the target-like pattern for non-finite verbs in (10), while only 5% of these examples exhibit the pattern in (11) in which a finite verb occurs in a non-finite context:

- (10) Ich werde etwas **erzählen**. (February 1984; 31 months)
 I will+1sg something tell-INF
 ‘I’m going to tell a story about something.’
- (11) dann kann ich abends nicht **schlafe** (September 1984; 38 months)
 then can I evenings not sleep-1sg
 ‘then I can’t sleep at night’

Errors are more frequent in finite contexts, such as (12) and (13), in which Ilhami produces a non-finite verb form where we would expect a finite form:

- (12) aber der Charlie schon **aufstehen** (June 1983; 23 months)
 but the Charlie already get-up-INF
 ‘but Charlie is already getting up’
- (13) wenn ich Arbeitsstelle **finden** (February 1984; 31 months)
 when I job find-INF
 ‘when I find a job’

However, as Table 3 below indicates, the frequency of non-finite verbs erroneously placed in finite contexts is also low:

Table 3: *Use of non-finite verbs in finite contexts*

	+ finite	- finite	TOTAL (non-finite verbs)
Declarative main clauses	507	59	59/566 (10.4%)
Embedded Clauses with an overt complementizer	56	9	9/65 (13.8%)
Questions	19	0	0/19 (0%)
	582	68	68/650 (10.5%)

As pointed out above, the MSIH allows for such overuse of non-finite verb forms. It predicts that they may occur in finite contexts because they are an uninflected default form (Prévost and White 2000). Conversely, the MSIH also predicts that there should be very few examples in which inflected verbs occur in non-finite contexts.

The results of the analysis in Tables 2 and 3 confirm both of these predictions: although Ilhami continues to make errors in verbal inflection by inserting infinitival forms in finite contexts, he makes only a handful of errors in the opposite direction. The difference in the frequency of errors with respect to the non-finite/finite distinction in each type of context is significant ($\chi^2 = 6.732$, $p < .01$, $df=1$). These results also corroborate the findings of Prévost and White (2000) and confirm the predictions of the MSIH that L2 learners make few errors by placing finite verb forms in non-finite contexts despite the fact that they may overuse non-finite forms as a default in finite contexts.

4. Two Sets of Problematic Examples for the MSIH

The previous section demonstrated that the MSIH makes a number of correct predictions concerning variable use of verbal inflection in Ilhami's interlanguage grammar. However, two sets of examples also provide support for competing views on morphological variability, namely, the Minimal Trees Hypothesis of Vainikka and Young-Scholten (1994, 1996, 1998) and Eubank's (1993/1994, 1996) Valueless Feature Hypothesis. In this section, I present examples of the problematic datasets from Ilhami's production data, explain how they may provide evidence in favor of these competing theories, and provide an explanation that allows us to keep several assumptions of the MSIH.

4.1 *The Null-Auxiliary Phenomenon*

As Table 3 indicated above, 68/562 (10.5%) of the examples with obligatory finite contexts contain a non-finite verb in a position where we would expect a finite verb. Many of these errors resemble the classic root infinitive phenomenon in which the verb appears in a bare infinitival form with *-en*, as in (12) or (13) above. However, a significant number of the examples of declarative main clauses in Table 3 contain a past participle rather than an infinitive. As examples (14) and (15) indicate, these sentences lack a finite auxiliary:⁵

- (14) Charlie Chaplin ___ diese Holz **genommen** (June 1983; 23 months)
 Charlie Chaplin (has) this wood taken-PARTICIPLE
 'Charlie Chaplin took the piece of wood'
- (15) Dann ___ die Mädchen zehn Tage später ein Haus **gefunden** (February 1984; 31 months)
 then (has) the girl 10 days later a house found-PARTICIPLE
 'Then the girl found a house 10 days later'

In 44 of the 59 examples (75%) of declarative main clauses with non-finite verbs in finite contexts, there is no auxiliary verb to accompany the past participle. All of these clauses share the same characteristics: they all lack an auxiliary verb – either *haben* 'have' or *sein* 'be'—and they contain a past participle in clause-final position. Furthermore, during this same developmental stage, Ilhami consistently produces target-like word order in clauses with an overt modal verb and an infinitive in clause-final position:

- (16) Er **will** im Haus **bleiben** (June 1983; 23 months)
 he wants in house stay-INF
 'he wants to stay in the house'
- (17) dann ich **wollte** jetzt **wechseln** (February 1984; 31 months)
 then I wanted now change-INF
 'then I wanted to exchange (money) right away'

At first glance, the examples like (14) and (15) appear to support Vainikka and Young-Scholten's (1998) version of the Minimal Trees Hypothesis, casting some doubt on the MSIH. In their analysis of L2 morphological variability, they focus on the acquisition of free morphemes, not bound morphemes, as triggers for syntactic structure. They predict that at the same time that L2 learners begin to supply various free morphemes, they display knowledge of functional projections further up the tree. In particular, Vainikka and Young-Scholten propose that the acquisition of modals triggers the FP projection, the copular paradigm triggers the AgrP projection, and overt complementizers trigger the CP projection (1998:105). In addition, they claim that the AgrP stage is characterized by the consistent use of auxiliaries (1998:96). According to this view, the non-suppliance of copular verbs

⁵ I have inserted a line where the auxiliary would occur in Standard German, and I have included the suppressed auxiliary in parentheses in the literal English translation.

and auxiliaries is indicative of a grammar that lacks AgrP. Only when L2 learners have acquired these free morphemes are they able to posit the corresponding functional projections.

Although the examples with null auxiliaries in the Ilhami-corpus seem to provide evidence that his grammar lacks an AgrP projection, an alternative analysis from an earlier L1 study provides an explanation for this phenomenon and allows us to maintain the position taken by proponents of the MSIH. In particular, Boser, Lust, Santelmann, and Whitman (1992) show that L1 learners of German go through a stage that they call the Null Auxiliary stage. Examples of the L1 data are provided below (Boser, Lust, Santelmann, and Whitman 1992:58):

- (18) nur wenn so ein kleiner Schiff gebaut, dann muss . . .
only when such a small ship built-PARTICIPLE then must (SP, 2,7)
- (19) Reh gelauf
deer run-PARTICIPLE (HW, 2,4)

During the same time at which L1 learners provide convincing empirical evidence that they have knowledge of V2, they also produce examples like (18) and (19) without auxiliaries.⁶ Boser *et. al.* (1992) propose the Null Auxiliary Hypothesis to account for the apparent optionality of overt auxiliaries (Boser *et. al.* 1992:56):

- (20) **Null Auxiliary Hypothesis** (for L1)
In contexts containing a non-finite verb form and no overt tensed auxiliary, C° is occupied at S-structure by a phonetically null auxiliary moved from its position in I°. This auxiliary contains the phi-features inserted in I°, including tense and agreement features, and is an empty pronominal category. . . .

In other words, L1 children optionally insert a phonetically null auxiliary in to the position of the finite verb. The features of this empty form are completely recoverable and licensed through I°.

There are a number of reasons to adopt a L2-version of optional null auxiliaries for Ilhami's interlanguage grammar. First of all, during the same time at which he produces periphrastic utterances without a finite auxiliary, there is still a significantly higher number of examples **with** an overt auxiliary. Although there are 44 examples without auxiliaries, there are also 140 examples like (21) with overt forms of *haben* 'have' or *sein* 'be', all of which are marked with target-like inflectional morphology:

- (21) dann der Charlie Chaplin **hat** seine Mantel und Hut **mitgenommen** (Feb. 1984; 31 months)
then the Charlie Chaplin has-3sg his coat and hat with-taken- PARTICIPLE
'then Charlie Chaplin took along his coat and hat'

Clearly, Ilhami has few complications with auxiliary placement and agreement inflection during this same period in which he occasionally leaves out the auxiliary. In terms of Vainikka and Young-Scholten's (1998) analysis, there is little evidence that he lacks an AgrP projection during this stage of development.

A comparison of all periphrastic expressions with and without an overt auxiliary also lends support to the null-auxiliary argument. In only two of 140 examples (1%) with a past participle and overt auxiliary does the past participle occur in a position other than clause-final position, as in (22) with a post-posed NP-object:

- (22) Dann den Polizisten **hat mitgenommen** Charlie Chaplin (February 1984; 31 months)
Then the policeman has taken-with- PARTICIPLE Charlie Chaplin
'Then the policeman took Charlie Chaplin along'

⁶ As evidence for obligatory V2, they present examples with topicalization and questions in which a finite verb moves to C° (52-53).

In all remaining examples, the past participle occurs in clause-final position (138/140 or 99%). In much the same way, in 44 of 44 examples **without** an auxiliary, the past-participle occurs in final position. To put it differently: the presence or absence of the auxiliary is the only characteristic that differentiates the two groups of examples with past participles. If there were no null-auxiliary in place, we might expect variation in the placement of the past participle in examples without an auxiliary, including placement in C°.

Finally, in the earliest transcripts, there is already evidence of verb movement in Ilhami's interlanguage grammar. Examples with negation from early interviews indicate that the finite verb moves to a higher position in the clause during the same stage at which Ilhami produces examples without auxiliaries.⁷

- (23) Ich **hab**'s nicht gesagt. (April 1983, 21 months)
 ich have-it not said
 'I didn't say it'

Again, this evidence is problematic for Vainikka and Young-Scholten's (1998) analysis in which the non-suppliance of free morphemes like auxiliaries and copular forms is indicative of a grammar that lacks various functional categories. Early instances of V-Neg order indicate that Ilhami has access to functional categories early on despite the sporadic occurrence of sentences without overt auxiliaries.

In sum, I suggest here that Ilhami goes through an intermediate stage in which auxiliary forms are optional. Although the frequent examples of periphrastic utterances without an auxiliary seem to lend support to Vainikka and Young-Scholten's (1998) analysis, the empirical evidence here indicates that Ilhami optionally inserts phonetically-empty null auxiliaries whose features resemble those of overt auxiliaries.

4.2 The Embedded Infinitive Phenomenon

In the earliest interviews, there are no examples of embedded clauses introduced by overt complementizers. The first example of this clause type with a complementizer *wenn* 'if' occurs in a transcript from November 1983, or 28 months after Ilhami's arrival in Germany. Assuming that this moment marks the beginning of a new stage of development with CPs and overt complementizers, I assume that all examples prior to this interview belong to an initial stage in Ilhami's interlanguage grammar. Here is the frequency of non-finite clauses in finite contexts from the earliest stage:

Table 4: Stage 1 -- non-finite verbs in finite contexts according to clause type from July 1982 (12 months) to September 1983 (26 months)

	+finite	- finite	TOTAL (non-finite)
Declarative main clauses	156	32	32/188 (17%)
Embedded clauses	0	0	0/0 (0%)

The next stage of development is characterized by sporadic use of overt complementizers and decreasing frequency of non-finite verbs in declarative main clauses:

⁷ This sentence is the first attestation of sentential negation in the corpus. The placement of the finite verb in relation to sentential negation in Ilhami's examples is consistently target-like throughout the entire corpus: in all 69 examples with sentential negation, the finite verb occurs to the left of negation (V-Neg); in the three examples with non-finite verbs in clauses with negation, the verbs occur in a position to the right of the adverbial (Neg-V).

Table 5: Stage 2 -- non-finite verbs in finite contexts according to clause type from November 1983 (28 months) to May 1984 (34 months)

	+finite	- finite	TOTAL (non-finite)
Declarative main clauses	264	25	25/289 (8.7%)
Embedded clauses	3	9	9/12 (75%)

In declarative main clauses, the frequency of non-finite verbs in finite contexts decreases from 17% to 8.7% between Stages 1 and 2, while the newly emerging embedded clauses with complementizers show the opposite trend. In 75% of the examples (9/12), an infinitive occurs in the position where we would expect a finite verb, forming a type of “embedded infinitive” clause:

- (24) wenn ich mit zusammen die andere Tee **trinken** (May 1984; 34 months)
 when I with together the others Tea drink -INF
 ‘when I drink tea together with the others’
- (25) wenn ich Arbeitstelle **finden** (February 1984; 31 months)
 when I job find
 ‘if I find a job’

Again, at first glance, the data here seem to support a theory of L2 morphological variability other than that of the proponents of the MSIH.⁸ The fluctuation between finite and non-finite forms in Ilhami’s production data fits nicely into Eubank’s (1993/1994, 1996) Valueless Feature analysis. Eubank’s hypothesis predicts that inflectional morphology will sometimes be present and sometimes not. Only when L2 learners determine the feature strength associated with the finite verb will the verb consistently occur in the appropriate position with target-like morphology. Unlike the Minimal Trees approach of Vainikka and Young-Scholten, Eubank’s proposal assumes that VP, IP, and CP are present already in the initial state of an interlanguage grammar, given full transfer from his L1 grammar. The problem is only that features remain inert until target-like agreement inflection is acquired. Under these assumptions, we would expect a general pattern of fluctuation like we see in Ilhami’s Stage 2 of development: there is variability in the suppliance of inflectional morphology no matter what functional categories are available.

I propose that the phenomenon of embedded infinitives in the second stage of development is evidence that Ilhami transfers morphological properties from Turkish into his interlanguage grammar. As pointed out in section 2, there are two sets of inflectional endings in Turkish: one for main clauses and one for embedded contexts. The data here suggest that Ilhami may be using a default infinitive marker for embedded clauses at the same time that he is using target-like verbal inflection in main clauses. He assumes that German has this dual agreement paradigm, and he differentiates between the two types of clauses by choosing a different agreement marker, *-en*, as a nominal or gerundive-like inflectional form.

Several empirical facts support this argument. First of all, the first embedded clauses with overt complementizers produced by Ilhami exhibit this type of agreement, indicating transfer in the first stage in which CPs are introduced by overt complementizers. Secondly, there is a significant difference between embedded and main clauses with respect to finiteness ($\chi^2 = 50.621$; $p < 0.001$, $df=1$), providing evidence that there is systematic variation and not random fluctuation between the two clause types. The clear asymmetry between embedded and main clauses indicates that there is a complementary distribution of agreement inflection according to clause type. Moreover, this type of systematic variation is counter-evidence for Eubank’s (1996) proposal. Following the assumptions of the Valueless Feature Hypothesis, we would not be able to account for the presence of agreement in main clauses and its absence in embedded clauses.

⁸ Note that these particular findings here don’t refute the evidence in support of the Missing Surface Inflection Hypothesis, although they do indicate that another approach such as Eubank’s Valueless Feature Hypothesis fares just as well in light of the data on embedded infinitives.

Finally, it appears that the phenomenon of the embedded infinitive is only temporary in the development of Ilhami's interlanguage grammar. The last example of an embedded clause with an infinitive is from a transcript recorded in May 1984 – seven months after the first example at the beginning of Stage 2. Assuming the remaining examples are included in Stage 3, I have included the frequency data for this stage in Table 6:

Table 6: Stage 3 -- non-finite verbs in finite contexts according to clause type from June 1984 (35 months) to September 1984 (38 months)

	+finite	- finite	TOTAL (non-finite)
Declarative main clauses	89	3	3/92 (3.2%)
Embedded clauses	53	1	1/54 (1.9%)

There is no longer a difference between clause types in this final stage of development. It seems that only in the initial stage with CPs and complementizers (Stage 2) does Ilhami utilize the default agreement marking to differentiate embedded clauses from main clauses.

To sum up: I propose that the variable use of morphology in intermediate stages of development in Ilhami's grammar can be attributed to a system of dual subject-verb agreement that has been transferred from the L1. Morphological variation during this period is systematic, not random, indicating that forces other than inert or valueless features (cf. Eubank 1993/1994, 1996) are at work in Ilhami's variable use of morphology.

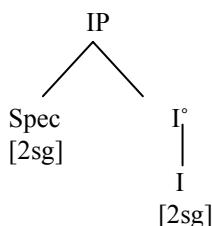
5. Conclusions

In conclusion, I return to the issue of the Mapping Problem, addressing the need to emend slightly some of the conclusions of recent analyses in Prévost and White (2000) and White (2003) which follow the assumptions associated with Distributed Morphology (DM).⁹

The main goal of DM is to distribute various properties of morphology that have been traditionally found in the lexicon to different parts of the grammar. In particular, bound and free morphemes are considered to be abstract morphosyntactic features in DM rather than lexical items, as had long been the assumption according to the lexicalist view. Morphological endings themselves are inserted late in the derivation as phonological items called Vocabulary Items at Spell-Out (Halle and Marantz 1993). While some Vocabulary Items may be fully specified for insertion, others may be underspecified items that compete at times with the more specific items for insertion as default signals. The Subset Principle governs the selection of these possible Vocabulary Items, allowing an item to be inserted into a morpheme if it matches all or a subset of the grammatical features specified by a morpheme. White (2003) demonstrates this process for the insertion of forms for the verb *verstehen* 'understand' (197-198):

(26) *du verstehst* 'you understand'

- a. verstehen: [α person, α number]
- b. verstehst; [2sg]
- c. versteht; [3sg]



⁹ For a more detailed discussion of Distributed Morphology, see Halle and Marantz (1993, 1994) and Halle (1997). Also, Rolf Noyer's introduction to DM on the internet is especially helpful:

<http://www.ling.upenn.edu/~rnoyer/dm/>

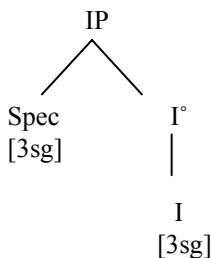
For discussion of the application of DM to analysis of L2 morphological variability, see Prévost and White (2000) and White (2003).

In this example, the choice of (26b) would provide an exact match for the terminal morpheme, whereas the insertion of (26c) would cause a feature clash in person features. Although it is not an exact match, the Vocabulary Item with the features of (26a) would be a proper subset of the features required for insertion.

As White (2003) points out, the difference between adult native speakers and many L2 speakers in this selection process is that something blocks access to the more specified features in L2 acquisition (199). Unlike native speakers, L2 learners often insert the underspecified form to avoid feature clashes due to a failure to connect with the most specific form. The empirical data here confirm that such a system is at work in Ilhami's interlanguage grammar. As the MSIH predicts, when agreement morphology is present, it is largely accurate, and when agreement morphology is not present, an underspecified form is inserted in its place.

The data in this study point to two possible reasons for "blocking" of specified forms in the process of mapping abstract to overt inflection. First of all, during the first two stages of development in Ilhami's interlanguage grammar, he inserts phonologically empty auxiliary forms. I suggest here that these null auxiliaries have all the properties of overt auxiliaries. In terms of DM, this type of "Vocabulary Item" is underspecified and appears without any phonetic realization. In much the same way as an underspecified form like the infinitive, a null auxiliary competes for insertion with all other possible candidates:

(27) *er hat* 'he has'

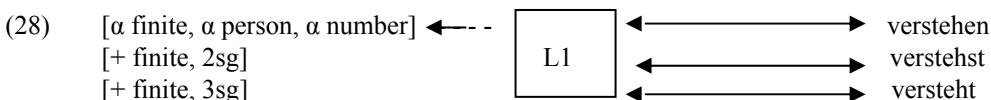


- a. [Ø]; [α finite, α person, α number]
 b. *hat*; [+ finite, 2sg]
 c. *hat*; [+ finite, 3sg]

Empirical data in this study and in L1 studies on the acquisition of German suggest that this is a plausible explanation for the emergence and variable use of empty auxiliaries. Furthermore, the temporary nature of this phenomenon indicates that only through extensive exposure to positive evidence from the target language can the L2 learner rule out the selection of this underspecified form.

Secondly, the data here suggest that L1 transfer plays a role in blocking the mapping process. Ilhami initially uses a dual system of morphological marking in which he produces a specific, target-like set of morphemes in main clauses at the same time that he attempts to use a different set of forms in embedded clauses. A similar pattern of morphological marking exists in Turkish. In other words, Ilhami transfers a general morphological property that connects abstract features to overt morphological in his L1--not any specific morphological content associated with Turkish inflection. As the examples with embedded infinitives show, this transferred morphological property disrupts the connection between abstract and surface inflection, and Ilhami selects only underspecified forms in these grammatical contexts.

There are no feature clashes in these instances, providing additional support to an analysis which utilizes Distributed Morphology. However, as the diagram in (28) attempts to show, a learner's L1 may act as a barrier in making connections in the selection process:



In Ilhami's case, this blockage is only temporary. Through positive evidence from the target language input, he is eventually able to map the appropriate abstract features to the corresponding overt morphological forms despite the initial barrier that L1 transfer causes in this process.

In general, an analysis which follows the assumptions of Distributed Morphology accounts for the L2 acquisition data presented here. However, these findings point to a need to allow for another type of underspecified form in the selection process, namely, phonetically empty items like null auxiliaries that compete alongside other underspecified items for insertion. The empirical facts here also shed light on the Mapping Problem in L2 acquisition. Although it is a common assumption that a learner's L1 may pose problems in this process, the data here indicate that this process is perhaps more complex than has been previously assumed.

Appendix: Ilhami Transcripts and the Three Stages of Development

Transcript	Date of Interview	Length of time in Germany (in months)
Stage 1: July 1982 – June 1983		
1	July 1982	12 months
2	July 1982	12 months
3	July 1982	12 months
4	July 1982	12 months
5	March 1983	20 months
6	March 1983	20 months
7	March 1983	20 months
8	April 1983	21 months
9	April 1983	21 months
10	June 1983	23 months
11	June 1983	23 months
12	June 1983	23 months
Stage 2 September 1983 – May 1984		
13	September 1983	26 months
14	September 1983	26 months
15	November 1983	28 months
16	November 1983	28 months
17	November 1983	28 months
18	November 1983	28 months
19	February 1984	31 months
20	February 1984	31 months
21	February 1984	31 months
22	February 1984	31 months
23	February 1984	31 months
24	February 1984	31 months
25	May 1984	34 months
26	May 1984	34 months
27	May 1984	34 months
28	May 1984	34 months
29	May 1984	34 months
Stage 3 June 1984 – September 1984		
30	June 1984	35 months
31	September 1984	38 months
32	September 1984	38 months

* Interviews are in bold-face. All other transcripts are informational without any transcribed text.

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