Language transfer
What do we really mean?

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Introduction

Most, if not all, second language (L2) researchers would agree that an L2 learner's first language (L1) plays a role in the acquisition of an L2. We know that L2 learners, in contrast to L1 learners, do not start at the initial state, S0; the L1 is in some way available to the L2 learner. However, while there is consensus at this level of discourse about the L2 acquisition process, there is little agreement concerning the precise nature of the L1 in the L2 target grammar construction (see related discussions in Gass and Selinker 1983; 1992). Can we account for the construction of the L2 grammar in terms of the grammatical features particular to the L1—the Transfer Hypothesis (TH)—or in terms of more general linguistic principles which, while guiding L1 acquisition, transcend the particular instantiation of the L1 grammar—the Universal Grammar (UG) approach?

Within the framework of the TH, it is assumed that the L2 learner relies primarily, if not solely, on the end product, viz., a steady state L1, to construct the grammar of the L2. Such a position implies that the principles that underlie the L1 acquisition process are no longer available to the L2 learner in the construction of the target L2 in a form other than as instantiated in the L1. Within a UG framework, both L1 and L2 acquisition are constrained by the same set of linguistic principles. That is, during the course of L1 acquisition, UG does not itself become the L1 grammar. Rather, it remains available to determine the course of subsequent language acquisition as well, viz., L2 acquisition.

Our purpose in this chapter is to highlight findings that will contribute to the development of a principled definition of 'transfer'. Our end goal is to develop one that is explanatory and consistent with a unified theory of both the L1 and L2
learning processes although we will not fully achieve this goal in this paper. We will briefly consider results from two different kinds of constructions in English: control and movement. These data suggest that during L2 acquisition, learners do not rely primarily on their L1 grammars in the construction of the target L2. Interestingly, this can be shown to be the case both when L2 learners manifest knowledge that is not exemplified in the L1 as well as in the case when the L1 does manifest a particular structure.

Control structures

Let us begin with a brief consideration of control structures in English. They all involve some form of anaphora, which we define in a general sense to characterize the relation between a ‘proform’ (either the null argument, PRO, or a lexical pronoun like he) and another term. Consider the examples in (1-3) below, in which coindexation indicates the anaphoric possibilities.

(1) a. John promised Henry, PRO to go to the store.
   b. John reminded Henry, PRO to go to the store.
   c. John told Henry, PRO to go to the store.

(2) a. John promised Henry, that he, PRO will go to the store.
   b. John reminded Henry, that he, PRO will go to the store.
   c. John told Henry, that he, PRO will go to the store.

(3) a. *John promised Henry that PRO will go to the store.
   b. *John promised Henry he to go to the store.

The set of sentences in (1) above involve an infinitive complement; those in (2) have tensed, finite complements. The sentence structures exemplified in (1) are subject to some type of Control theory which restricts both the distribution and interpretation of the empty category PRO. The starred sentences in (3) indicate that the lexical pronoun may not appear in what has been characterized as the ‘control domain’. The interpretation of the PRO subjects are constrained to be obligatorily coreferential with one unique name in the sentence. In this way, PRO is unlike the lexical pronouns which are ‘free’.

In control structures, the verb of the main clause is involved in determining the choice of the antecedent of the PRO subject. For example, as the indices indicate, when the matrix verb is tell or remind, the antecedent of PRO is the matrix object, Henry. When the matrix verb is promise, the antecedent of PRO is the matrix subject, John. Thus, a full grammatical analysis of control involves a number of different factors: structural configurations, intrinsic properties of verbs,
and other semantic and pragmatic considerations as noted by Chomsky (1981). In UG theory, numerous proposals have been made for a theory of control. The principal features of these proposals concern the fact that in these sentences there is a structural domain which involves c-command, in some version, of PRO by an antecedent where the antecedent and PRO satisfy certain structural restrictions.

In terms of these restrictions, the crucial difference between sentences containing a non-finite, infinitival clause and those containing a finite *that* clause is the fact that sentences with infinitivals provide a domain within which the reference of the PRO can be fixed to a minimal antecedent. By contrast, in the sentences with finite clauses, the presence of a complementeizer, *that*, obstructs the definition of a minimal command domain containing a possible antecedent, hence, the reference of the proform cannot be fixed by the minimal controller and it is free by Principle B of the Binding Theory (see extended discussion in Sherman and Last 1993).

In this context, let us consider what a strict version of the TH would predict for the L2 acquisition of these structures in English by adult Japanese, Chinese and Spanish speakers. We will begin with a brief description of the relevant facts in Japanese, Chinese and Spanish.

**Japanese**

The relevant sentences for Japanese are shown in (4) below. The sentences in (4a), (4b) and (4d) indicate that Japanese clearly has finite clauses. It has also been argued that Japanese does not have an infinitive although there is a form of the verb *yoo ni* that attaches to a verb form that cannot inflect for tense as shown in (4c). It is unclear what the nature of the null element is in these sentences, although we have written it as PRO. Japanese does have pronouns, but they behave more like NPs in English than like pronouns. With respect to specific control properties, the verb *yakusoku* 'promise' in Japanese takes a tensed clause and PRO can either be subject or object controlled as in (4a). Pronouns in these sentences tend to be strongly subject controlled.

   John-NOM Henry-DAT PRO will be chosen COMP promised
   John, promised Henry, that PRO₁ will be chosen.

   John-NOM Henry-DAT he/PRO will be chose COMP told
   John, told Henry, that he/PRO₁ will be chosen.
The verb *ita* ‘tell’ in Japanese can take either a finite clause or a form of the verb *yoo ni*. With a finite clause for the verb *ita*, control is ambiguous as in (4b) above. But with the *yoo ni* form there seems to be a preference for object control as in (4c). Tentatively, it appears that with a finite subordinate clause, control is ambiguous, with *yoo ni* it is not, and at least in the case of *ita* it is solely object-controlled. *Omoidas* ‘remind’ in Japanese, as in (4d), is a causative type verb that takes a full tensed clause with the nominalizer *koto* ‘fact’. The null pronoun is three-way ambiguous in this sentence.

### Chinese

As in Japanese, Chinese clearly has finite clauses with an aspect marker *-le*. However, Chinese does not seem to have an infinitive. There is no morphological marking to determine this. In addition, as in Japanese, the status of the null pronominal element is not clear; it also appears that it is not the same element as in English regardless of its status.

As seen in the examples in (5) below, Chinese allows both a null and an overt pronoun. With respect to control properties, *daying* ‘promise’ in Chinese, as in English and Japanese, is subject controlled as seen in (5a-b); *pro* is object controlled with *jiao* ‘tell’ and *tixing* ‘remind’ as in (5c) and (5e), with an overt pronoun, control is free as shown in (5d) and (5f).

\[(5)\]
\[a. \] John, daying Henry, pro, i, qiu shangdian.
John promise Henry pro go to store
John promises Henry, pro, i, to go to the store.

\[b. \] John, daying Henry, i, qiu shangdian.
John promise Henry he go to store
John promises Henry, that he, will go to the store.

\[c. \] John, jiao Henry, pro, i, qiu shangdian.
John tell (shout) Henry go to store
John, tells Henry, pro, i, to go to the store.
LANGUAGE TRANSFER: WHAT DO WE REALLY MEAN?

d. John, gaosu Henry, ta i, j, k bu-neng chi dao.
   John tell Henry he not-can be late
   John tells Henry he cannot be late.

c. John, tixing Henry, pro i, j, k qi shangdian.
   John remind Henry go to store
   John reminds Henry that he will go to the store.

f. John, tixing Henry, ta i, j, k huiyi qi shangdian.
   John remind Henry he would go to store
   John reminds Henry that he would go to the store.

Spanish

In contrast to Japanese and Chinese, Spanish clearly has both finite and non-finite clauses, as seen in the examples in (6) below. Spanish also has PRO, like English, as shown in (6a) and a pro in finite clauses, like Chinese and Japanese as in (6c-d). All three verbs, prometer ‘promise’, recordar ‘remind’ and decir ‘tell’, allow finite clauses; however, no infinitive is allowed with tell or remind. Promise is subject controlled with PRO as in (6a) and free with pronouns.

(6) a. Juan, le; promete a Henry, PRO i, j, k ir a la tienda.
   Juan him promise to Henry to go to the store
   Juan, promises Henry, PRO i, j, k to go to the store.

b. Juan, le; promete a Henry, que pro ir a la tienda.
   Juan him promise to Henry that will go to the store
   Juan, promises Henry, that he will go to the store.

c. Juan, le; dice a Henry, que pro vaya a la tienda.
   Juan him tell to Henry that go to the store
   Juan, tells Henry, pro i, j, k to go to the store.

d. Juan, le; recuerda a Henry, que pro ir a la tienda.
   Juan him remind to Henry that will go to the store
   Juan, reminds Henry, that he will go to the store.

To summarize, Japanese, Chinese and Spanish all have pronouns as in English, all three languages also have some form of a null pronoun although this matches most closely between Spanish and English. Spanish has infinitives; however, though it appears that the grammars of Japanese and Chinese have a finite verb form, they do not instantiate infinitives. Overall, then, if L2 acquisition is indeed constrained by principles of UG, then we would predict that patterns of acquisition for all three groups should be comparable; moreover, we would also predict that the patterns should correspond to those isolated for L1 acquisition of
Table 1: ESL proficiency levels (Michigan Test score range: 0-50)

<table>
<thead>
<tr>
<th>Level</th>
<th>Japanese</th>
<th>Language</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=13)</td>
<td>(n=11)</td>
<td>(n=9)</td>
</tr>
<tr>
<td>Mid</td>
<td>29.6</td>
<td>29.18</td>
<td>32.2</td>
</tr>
<tr>
<td>High</td>
<td>44.4</td>
<td>44.1</td>
<td>45.17</td>
</tr>
<tr>
<td>Overall</td>
<td>(n=22)</td>
<td>(n=10)</td>
<td>(n=12)</td>
</tr>
<tr>
<td></td>
<td>37.0</td>
<td>36.7</td>
<td>38.6</td>
</tr>
<tr>
<td></td>
<td>(n=35)</td>
<td>(n=21)</td>
<td>(n=21)</td>
</tr>
</tbody>
</table>

Table 2: Mean ages of ESL learners

<table>
<thead>
<tr>
<th>Level</th>
<th>Japanese</th>
<th>Language</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=13)</td>
<td>(n=11)</td>
<td>(n=9)</td>
</tr>
<tr>
<td>Mid</td>
<td>28.7</td>
<td>25.4</td>
<td>23.8</td>
</tr>
<tr>
<td>High</td>
<td>30.6</td>
<td>24.9</td>
<td>27.0</td>
</tr>
<tr>
<td>Overall</td>
<td>29.7</td>
<td>25.1</td>
<td>25.4</td>
</tr>
</tbody>
</table>

English. However, if L2 learners were relying on L1 alone, we would have the following prediction: In the acquisition of control structures, native speakers of Chinese and Japanese should prefer finite over non-finite clauses. Native speakers of Spanish should show a preference for finite clauses with tell and remind as those verbs do not take infinitives in the L1.

To test these predictions, we tested three groups of language learners at two distinct stages of ESL proficiency. Leveling was determined by the results of the listening comprehension and the grammar subtests of the Michigan Test, which was administered to all learners prior to testing. Levels were independently determined based on norms established by the Michigan Test. Learners at the beginning level were not tested as they did not have the minimal required syntax to complete the tasks. The results for each of the three language groups is shown in Table 1. Mean scores indicated that the learners were equated in terms of their general ESL abilities as measured by the placement test. Mean ages of these learners are shown in Table 2.

The learners were administered an elicited imitation task in which they were asked to repeat the sentence verbatim as given by the experimenter. All subjects were given bilingual lists of the words to be used in the experimental sentences.
before the actual testing. All sentences were equalized in syllable length and approximately in number of words; they were also pragmatically neutral.

Sentences administered to the subjects are exemplified in (7) below. We used three verbs: subject-controlled promise and the object-controlled remind and tell. (see related discussion in Flynn, Foley and Lardiere 1991). Sentences in (7a) involve infinitivals and a PRO in subject position of the subordinate clauses. Sentences in (7b) involve tensed that-clauses with a pronoun in subject position.

(7) a. Infinitives
The worker reminds the woman to inform the engineer.
The gentleman tells the teacher to introduce the owner.
The lawyer promises the doctor to prepare the message.

b. Finite that-complements
The boss reminds the man that he will finish the assignment.
The owner tells the architect that he will prepare the lunch.
The owner promises the boss that he will review the test.

Overall results are shown in the graph in Figure 1. There are no significant differences between the mid and high ESL levels, thus, we have conflated the results as illustrated in the graph. All subjects indicate an overall preference for the infinitival structures (sentences in (7a) above) over their finite counterparts (sentences in (7b)), clearly a result which contradicts those made by the TH. Results for amount correct for all three groups indicate more correct productions for the infinitival structures than the tensed structures. In addition, as illustrated in

![Figure 1: Mean amount correct](image-url)
Figure 2, results of the error analyses indicate more conversions of the finite that-clauses to infinitival complements than conversions of the infinitives to finite that-clauses for the Japanese and Chinese. For example, when given the sentence *The boss reminds the man that he will finish the assignment*, the learners would often convert this sentence to *The boss reminds the man to finish the assignment* in their imitations, but they would rarely convert infinitives to finite that-clauses. By contrast, the Spanish speakers made very few conversions of this type although the Spanish speakers as well as the Japanese and Chinese speakers made significantly more structural errors on that-clauses than on infinitives, as shown in Table 3 below. Structural errors all involved some structural alteration of the initial stimulus sentence. These errors did not include, for example, simple lexical substitutions. This finding also suggests the primacy of infinitives over finite clauses in L2 acquisition.

Table 3: Overall amount of structural error (percent correct)

<table>
<thead>
<tr>
<th>Language</th>
<th>Infinitival</th>
<th>Finite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish</td>
<td>2%</td>
<td>12%</td>
</tr>
<tr>
<td>Japanese</td>
<td>9%</td>
<td>29%</td>
</tr>
<tr>
<td>Chinese</td>
<td>21%</td>
<td>43%</td>
</tr>
</tbody>
</table>
How do we account for these results? As we have seen, the overall preference for infinitival structures cannot be accounted for in terms of the L1s of the adult learners tested. A solution suggests itself, however, if we go back to the minimality condition outlined above. Recall that sentences with infinitivals lend themselves to the definition of a minimal domain with a fixed antecedent for the proform, while in the case of finite clauses, minimality cannot be applied to fix the reference of the proform. We suggest that the preference for infinitival structures over their finite counterparts reflects the crucial role of minimality—and not the L1—in constraining L2 grammar construction. Simply stated, L2 learners follow a UG principle which will allow them to fix the reference of the proform. This explanation also coheres with data from other studies in both L1 and L2 acquisition (e.g., C. Chomsky 1969; Sherman and Lust 1993; d'Anglejan and Tucker 1975; Cooper, Olshaint, Tucker and Waterbury 1979) which show a marked preference for object control, which again follows from the principle of minimality. It seems that L2 learners resort to the principle of minimality in the acquisition of control structures. Further research is needed to determine the extent of the application of this principle in second language acquisition.

Acquisition of Wh-structures

Consider now another example, the acquisition of Wh-structures, illustrating that L2 grammars are not collections of transferred L1 structures but rather reflect generation via an invariant computational system. Cross-linguistically there are at least two ways in which question-formation can be instantiated at surface structure: either with overt Wh-movement or without.

At least three principles of Universal Grammar have been proposed to constrain the instantiation of overt movement: Subjacency, the Constraint on Extraction and the Empty Category Principle. In somewhat more recent versions of the theory (e.g., Chomsky 1986), these have been subsumed under the notion “barrier”. We will here only be concerned with two aspects of movement constraints determined by barriers. The first one accounts for the difference between sentences (8a) and (8b) below; the other explains the difference in degree of acceptability between the starred (unacceptable) sentence in (9a) and the question-marked (marginally acceptable) sentence in (9b). Note that the extraction site is indicated by a trace (t) in the examples.

(8) a. What did Tom fix that the man had broken?
   b. *Who did Tom fix the door that t had broken?

(9) a. *Which soup did the man leave the table after the waiter spilled t?
   b. ?Which car did John spread the rumor that the neighbor stole t?
The difference between (8a) and (8b) derives from the fact that in (8a), where the head of a relative clause is questions, extraction of the Wh-word doesn't cross any barriers. In (8b), on the other hand, extraction out of the relative clause crosses two barriers and results in a violation (see extended discussion in Martohardjono 1993). The difference between (9a) and (9b) is more subtle, one involving degree of acceptability. The difference derives from the fact that (9a) involves extraction out of an adjunct clause, which results in a strong violation because it involves crossing two invariant barriers. In contrast, the extraction out of a noun complement in (9b) results in a weak violation because here only one barrier is crossed, and, furthermore, barrierhood depends on the particular properties of the verb, namely, whether it assigns a thematic role or not. The sentences in (9a-b) represent differences between strong and weak violations.

What would a TH predict in terms of the acquisition of these structures in English by L2 learners whose L1s do not instantiate overt Wh-movement in questions? Indonesian and Chinese are two such languages (Huang 1982; Martohardjono and Gair 1993), hence, the L1 grammar for speakers of these languages does not provide structures from which knowledge of movement constraints can be derived. In addition, the Wh-questions in these languages do not provide knowledge about varying degrees of acceptability as in the examples in (9a-b) above. The TH would therefore predict the following: If L2 learners are guided by transfer from the L1 in their acquisition of Wh-questions, they should not evidence knowledge of movement constraints. That is, they should accept sentences like (8b) to the same degree as sentences like (8a). Furthermore, they should not evidence knowledge of differential violations (i.e., strong vs. weak) since in their L1s questioning a Wh-word in any of these domains results in grammaticality. Knowledge that (8b) is ungrammatical in English can only be derived from UG. Similarly, knowledge that (9a) is stronger violation than (9b) is also provided by UG. The UG prediction for these learners is therefore that they should evidence (a) knowledge of ungrammaticality of violations in general and (b) knowledge of relative acceptability in particular.

For this experiment, testing involved a group of native-speaking controls (n=10) and two groups of L2 learners of English, one with L1 Chinese (n=16) and the other with L1 Indonesian (n=17). The sentence-types in the experiment included extractions out of relative clauses and adjunct clauses (strong violations) and extractions out of Wh-islands and noun complements (weak violations). Ungrammatical extractions were matched with grammatical extractions out of the same domains. The task was a paced grammaticality judgment task. Subjects were presented sets of Wh-questions preceded by a declarative sentence as in (10) below.
Table 5: Mean percent correct rejection of all ungrammatical sentences

<table>
<thead>
<tr>
<th>Language</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Chinese</td>
<td>65%</td>
</tr>
<tr>
<td>Indonesian</td>
<td>74%</td>
</tr>
<tr>
<td>English</td>
<td>92%</td>
</tr>
</tbody>
</table>

![Bar chart showing knowledge of strong vs. weak violations](chart)

Figure 3: Knowledge of strong vs. weak violations

(10) The man left the table after the waiter spilled the soup.

They were told that this declarative was a grammatical sentence in English. They then heard four questions which were derived from the declarative sentence: one grammatical extraction, one violation, and two filler sentences. Examples of the grammatical and ungrammatical extractions are given in (11a-b) below.

(11) a. Which man left the table after the waiter spilled the soup?
b. Who did the man leave the table after spilled the soup?

They were asked to judge each question as a 'good' or a 'bad' sentence in English and were instructed to respond 'yes' in the former case or 'no' in the latter. They were also given the choice of 'not sure' and 'don't understand'. All sentences were taped and presented twice. The task was paced so that subjects had six seconds in which to respond to each sentence.

Table 5 provides the results for mean percent correct rejection of all the ungrammatical sentence-types. As can be seen from these results, both the Indonesian and the Chinese groups showed general knowledge that sentences like (8b), (9a) and (9b) above (i.e., violations of movement constraints in English) are
ungrammatical. Furthermore, they evidenced the more subtle ability to differentiate between the different types of violations. This can be seen in the graph in Figure 3, which shows that, like the control group, both the Chinese and the Indonesian groups rejected the strong violations (relative clause and adjunct clause) to a higher degree than weak violations (Wh-islands and noun complements). Critically, the type of knowledge evidenced by these learners cannot be derived from the equivalent structures in the L1. Transfer from the L1, in other words, is not a possible explanation of these results. Instead, they suggest that in L2 grammar construction learners must have access to another source of knowledge, namely, to UG principles, even if these happen not to be instantiated in the same way in the L1.

Conclusion

To summarize, we have presented data which suggest that in the acquisition of control structures L2 learners ignore what is made available to them in the L1, both in terms of particular grammatical properties (finite/non-finite) as well as in terms of lexical properties (Spanish does not allow infinitives in control structures). Instead, they resort to a principle of UG, minimality, which results in a marked preference for sentences with infinitival clauses. In the acquisition of Wh-questions, L2 learners clearly evidence knowledge of movement constraints in spite of the fact that movement is not instantiated in the equivalent structures in the L1. In addition, they evidence a more subtle and differentiated knowledge of strong and weak violations, again not derivable from the L1. These data then lead us to the following conclusions:

• L2 learners do not assume that the L2 is like the L1.

• The Transfer Hypothesis fails to explain L2 learners' knowledge of deeper principles as well as systematic errors.

• Theories that ignore such data will ultimately fail to provide a full account of L2 learners' process of grammar construction and at best provide only superficial descriptions of peripheral phenomena in L2 acquisition.

Thus it seems that L2 learners do not assume that the L2=L1. Transfer theories are inadequate in that they fail to explain both L2 learners' knowledge of what is not instantiated in the L1 (movement) as well as their preferences and systematic errors (control). We argue that at best transfer theories describe peripheral phenomena in L2 acquisition and that a principled theory of second language acquisition needs to incorporate a theory of Universal Grammar.
Notes

1. It is important to note that the UG position does not necessarily hypothesize for all areas of L2 acquisition that the patterns of acquisition for L2 learners with distinct L1s learning a common L2 will be the same. Other work (e.g., Flynn 1983, 1987; Flynn and Martohardjono 1994) suggests, for example, that differences will emerge among learners in terms of a match/mismatch of the head-direction/head-complement parameter. The goal of the present paper is to highlight at least two ways in which we cannot make predictions about the role of the L1 in L2 acquisition in terms of surface structure contrasts between the L1 and the L2.

References
