John Benjamins Publishing Company

What is easy and what is hard

Lessons from linguistic theory and SLA research

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This chapter presents an overview of research, past and present, which has explored the extent to which linguistic theory and generative second language (L2) research offer insights for the language classroom. A number of issues are addressed, including the potential role of negative evidence, questions raised by linguistically misleading input, and linguistic accounts relating to acquisition orders. Consideration is given to proposals grounded in linguistic description (such as Slabakova's Bottleneck Hypothesis) and how such proposals can help to pinpoint problem areas for L2 learners, as well as ways of making such descriptions accessible to language teachers. It is concluded that uncovering implications for language teaching is a bonus and not a requirement of research on second language acquisition.

Keywords: Bottleneck Hypothesis, Feature Reassembly Hypothesis, Learnability, Negative evidence, Positive evidence, Universal Grammar (UG), Verb raising/ verb movement

Generative second language (L2) research considers the nature of interlanguage competence, addressing the roles of Universal Grammar (UG) and the mother tongue (L1) in the acquisition, representation, and use of second languages. Such research is not usually undertaken with pedagogical considerations in mind: it aims to increase our understanding of how languages are acquired rather than how they should be taught. Nevertheless, in recent years there has been a revival of interest in potential applications of linguistic theory and generative L2 research to the language classroom (see, for example, Whong, 2011, 2012; chapters in Whong, Gil, & Marsden, 2013). Slabakova's research has played an important role in this revival, with her focus on determining, from a linguistic perspective, which aspects of grammatical competence are easy to acquire and which are not, and how such findings can be implemented from a pedagogical perspective (e.g., Slabakova, 2008, 2009, 2013). Slabakova mainly addresses problems caused by morphology

and its interfaces with different modules of the grammar. Other researchers focus on other components of the grammar, particularly syntax, as we shall see.

In this paper, I will present an overview of research, past and present, which explores the extent to which generative linguistic theory and generative L2 research offer insights for the language classroom. A number of different implications have been pursued in the generative L2 tradition over the years, starting with a consideration of the implications of learnability and the potential role of negative evidence in the L2 context (White, 1991, 1992), followed by an examination of the effects of misleading input in the classroom (Bruhn-Garavito, 1995; Belikova, 2008; Halloran & Rothman, 2015); more recently, the importance of sophisticated linguistic descriptions has been revisited (Whong et al., 2013), and the Bottleneck Hypothesis has been proposed (Slabakova, 2008, 2009, 2013). These different approaches to potential implications for language teaching and textbook descriptions of grammar will be considered in the following sections.

Before looking at the applicability of linguistic theory to language pedagogy, we need to consider whether any direct applications to language teaching are to be expected at all. This is an area where extreme caution is needed. The aim of formal L2 acquisition research, including research conducted in the generative tradition, is to reach an understanding of the nature of interlanguage competence and how L2 grammars are acquired. Even when such understanding is attained, this does not necessarily offer clear insights into the best way to teach languages. The theoretical groundings of language pedagogy are, rightly, different from linguistic theory and generative L2 acquisition theory. Nevertheless, there is growing interest in establishing a fruitful interaction between these domains, in both directions. How can theory shed light on practice? How can the experience of language teachers in the classroom shed light on theory?

Early approaches

Speculation on the relationship between linguistic theory and language teaching is not new. Indeed, suggestions about the relevance, or lack thereof, of linguistic theory for language teachers appeared soon after the publication of Chomsky (1965). For example, opposing positions were adopted by Thomas (1965) versus Lamendella (1969). Thomas argued that language teachers should become familiar with the current theory of the time, namely Transformational Generative Grammar (TGG). Lamendella argued against this position, claiming that TGG was of no relevance to theories of language learning or teaching. Lakoff (1969) argued against structuralism, rote learning, and the audio-visual method, and in favour of using insights from TGG to arrive at appropriate pedagogical rules. For

proponents of a role for TGG, the main emphasis was on the need for language teachers to understand how language works; TGG offered new insights in this respect. However, this was not seen as meaning that linguistically formulated rules should be taught in the classroom (see papers in Lester, 1970).

Recent generative L2 research has returned to the idea that linguistic descriptions might provide (possibly indirect) benefits for teachers. Once again, the position advanced by most researchers is not that linguistic rules should be taught as such in the classroom but, rather, that linguistic descriptions provide the teacher with potential insights into the working of language that can be transmitted to students in various forms.

What we don't need to teach

Before considering a potential role for generative linguistic theory and generative L2 theory in identifying aspects of language that could benefit from instruction, it is important to bear in mind that a central implication of linguistic theory is that there are properties of grammar that are too complex and subtle to be learned from input alone. According to theories that espouse Universal Grammar (UG), L1 acquisition is constrained by built-in knowledge, accounting for the fact that children attain properties of grammar that go well beyond the input.

If UG holds for non-native acquisition as well, as many have argued (see Slabakova, 2016; White, 1989, 2003), then there will be properties of the L2, stemming from UG, which do not need to be taught. Research that has looked at whether principles of UG continue to operate in L2 acquisition has demonstrated that there are many complex phenomena which L2 learners come to know without the benefit of instruction (see Slabakova (2016) and White (1989, 2003) for examples and overviews). Instead, certain UG-related properties simply 'happen' during the course of L2 acquisition; they 'come for free', so to speak (Slabakova, 2013). Indeed, without realizing it, language teachers presuppose this kind of knowledge in their students; language teaching (where it is oriented towards language structure) concentrates (rightly) on language-particular properties rather than on universal principles. In the next section, I will focus on situations where L2 acquisition does not necessarily come for free and where theory may suggest ways to assist learning, with a consideration of the kinds of input that may help or hinder the L2 learner.

Learnability considerations

Effects of negative evidence in the classroom

In generative linguistics and in the field of L1 acquisition, a consideration of the nature of the input available to language learners provides the major motivation for UG. The assumption is that the input alone is insufficient to account for the knowledge eventually attained. Language acquirers are exposed to positive evidence, that is, utterances that occur in the input, which provide exemplars of what the language is like, though these utterance are by no means sufficient to account for everything that language acquirers come to know. Negative evidence (information about ungrammaticality) is unavailable or, if available, inconsistent and unreliable (see Marcus (1993) for a review of the issues surrounding the negative evidence debate). The solution to the presumed insufficiency of the input is the postulation of an innate UG underlying the acquisition of grammar, i.e., for specifically linguistic principles and parameters, which are triggered by the input.

The situation in instructed L2 acquisition is rather different, at least potentially. For a start, it is not clear to what extent L2 learners get the same type and amount of positive input as L1 acquirers. Felix and Weigl (1991), for example, suggest that formal L2 classroom instruction provides quite limited input, insufficient to trigger principles of UG, at least in the context they investigated. Second, there are many classroom contexts, particularly those oriented towards more formal instruction and grammar teaching, where negative evidence is readily available. Grammar teaching is in itself a form of negative evidence. For example, a sentence like "All English sentences must have a subject" provides negative evidence that null subjects are not permitted. In addition, teachers who correct their students are providing negative evidence about the language being acquired. This raises the question of whether L2 learners ever face situations in which negative evidence might be essential and whether they are able to make use of such evidence to restructure the interlanguage grammar.

Early investigations of potential applications of generative research for language pedagogy centred on situations where the L1 and L2 exemplified different settings of some parameter of UG. On the assumption that L2 learners start with the L1 grammar as their initial hypothesis (Schwartz & Sprouse, 1996; White, 1985), the question arises as to what kind of evidence (positive or negative) is required to reset parameters from the L1 value to the L2 setting. In particular, the question was raised as to whether specific grammar teaching and correction in the language classroom can fill gaps not provided by positive evidence from the L2.

Studies by White and colleagues (Trahey, 1996; Trahey & White, 1993; White 1990/1991, 1991, 1992) were probably the first to pursue questions of learnability,

as defined in the generative tradition, in the context of language teaching. These studies focused on whether negative evidence or explicit positive evidence in the classroom could provide beneficial input in the case of crosslinguistic differences between L1 and L2. The issue in question involved differences between the positions of lexical verbs in English and French and their consequences for other properties of grammar (see White (2003) for a detailed overview).

In French, lexical verbs raise, appearing high in the structure in questions and negatives, as well as above adverbs (see 1a). In English, on the other hand, main verb raising does not take place (see 1b). In consequence, sentences that are grammatical in French are ungrammatical in English (compare 1a and 1c) and it is not clear what positive evidence would signal this difference to the learner.

(1) a. Marie boit   souvent du   café
         Mary drinks often   some coffee
     b. Mary often drinks coffee
     c. *Mary drinks often coffee

Pollock (1989), building on work by Emonds (1978), attributed these contrasting properties to a parameter with different values for English and French, sometimes referred to as the Verb Movement Parameter. White and colleagues undertook several studies investigating whether classroom input (both positive and negative) can bring about resetting from the French to the English value. In particular, do French-speaking learners of English initially assume that English allows word orders like (1c)? If so, can classroom input lead to a change such that they come to realize that forms like (1b) are the appropriate ones for English? In these studies, elementary school children (aged 11–12) were tested. They were beginners at the time of testing. Participants were divided into two groups, only one of which received instruction on adverb placement, including the possibility of the word order in (1b) where the adverb precedes the main verb (SAVO) and the impossibility of the order in (1c) where the adverb follows the verb (SVAO). Instruction included explicit grammar rules about where to place adverbs in English, as well as a variety of classroom activities manipulating the structures in question. Correction was also provided when the children made word order errors involving adverbs.

The experimental group and the control group were pretested on a variety of tasks looking at knowledge of English adverb placement; both groups showed acceptance of sentences with French word order, like (1c). Immediately after the teaching intervention, they were retested on the same tasks. The group instructed on adverb placement showed a dramatic increase in use of the English SAVO order and a significant decline in use of the French SVAO order. The uninstructed control group showed little change in their linguistic behaviour in this regard. The results, then, suggest that explicit evidence about word order possibilities concerning

adverb placement was effective in leading to changes, such that ungrammatical forms were recognized as such and grammatical forms were used appropriately. In other words, classroom input had apparently resulted in parameter resetting. However, Schwartz and Gubala-Ryzack (1992) and Schwartz (1993) question this claim. While they recognize that negative evidence did lead to changes in linguistic behaviour, they argue that it did not result in changes in the underlying grammar. In other words, a transition from one parameter setting to the other did not take place, a position supported by the fact that the children overgeneralized the instruction beyond what they had been taught, inappropriately prohibiting adverbs from appearing between intransitive verbs and prepositional phrases (rejecting sentences like *Mary walked quickly to the park*). Furthermore, post-testing one year later showed that the children in these studies largely reverted to their pre-instructional behaviour.

Accounts that assume a role for negative evidence face the issue of the relationship between unconscious linguistic competence and learned linguistic knowledge (Krashen's (1981) acquisition/learning distinction). Debate centres on the issue of whether explicit linguistic information, such as that provided via negative evidence, can or cannot feed into the unconscious linguistic system. For some researchers, the answer is a clear 'no', such that true grammatical restructuring is unable to take place on the basis of explicit positive evidence or negative evidence (Krashen, 1981; Schwartz, 1993). For others, the answer is 'yes' or 'maybe' (Carroll, 2001; Slabakova, 2016; White, 1991).

As Schwartz and Gubala-Ryzak (1992) pointed out, the potential role for negative evidence (and explicit positive evidence) can be considered at a conceptual level as well as empirically. At a conceptual level, negative evidence has been rejected by generativists as playing any kind of significant role in explaining L1 acquisition. White and colleagues argued that the L2 situation may be different; assuming L1 transfer, an L2 learner may be in the situation of transferring a superset grammar (a grammar that allows a wider range of options than the L2) from the L1 to an L2 which requires a subset (or more restricted) grammar. In such cases, positive evidence will not, in principle, be available to ensure parameter resetting. In White's studies of verb placement differences between French and English, she argued that negative evidence was effective (at least in the short term). Schwartz and Gubala-Ryzak, however, rejected a role for negative evidence in L2 on conceptual grounds (relating to modularity of the language faculty). They argued that the effectiveness of negative evidence and explicit positive evidence in the White studies was only apparent: while changes to the learned system did indeed result from the classroom intervention, their reanalysis of the data suggests that no restructuring of the unconscious system took place (no parameter resetting, in other words). Rather, learners came up with a pattern-matching rule, extending what

they had been taught in ways inconsistent with natural language. This, to them, is evidence of a learned system independent of an acquired one (see Schwartz, 1993).

Given the disagreements about whether or not negative evidence results in changes to the underlying grammar, it might appear that there is no clear classroom implication here. However, the linguistic approach is able to identify potentially problematic areas, based on an analysis of subtle L1/L2 differences, where negative evidence might be useful to the learner; this is true regardless of whether such evidence feeds into a conscious or unconscious linguistic system. In this respect, it is useful to consider more recent work on adverb placement by Rankin (2013), who proposes a 'grammaring' treatment (Larsen-Freeman, 2003). The idea is to encourage students to engage in conscious analysis of language and to formulate their own rules, rather than having overly general rules provided by the teacher. Rankin suggests that adverb placement would be amenable to such an approach and that, at the very least, this approach would improve learners' conscious knowledge and their linguistic behaviour, making up for lack of implicit knowledge.

Inappropriate or misleading classroom input

We turn now to problems relating to potentially misleading effects of classroom input or information provided in textbooks. Several studies have identified situations where the classroom input includes explicit instruction about grammatical phenomena in the L2 which is, in fact, contrary to the way the L2 actually works, in other words, contrary to the intuitions of native speakers. This raises the issue of whether learners are in fact misled or whether they are somehow able to override the misleading input. Bruhn-Garavito (1995), Belikova (2008) and Halloran and Rothman (2015) have demonstrated that L2 learners are able, at least in some cases, to arrive at relevant UG-constrained generalizations, despite misleading input. In other words, they are able to ignore or over-ride the input.

One such case is considered by Bruhn-Garavito (1995), who looked at the L2 acquisition of the Spanish subjunctive, in particular a subjunctive rule, which is explicitly taught in L2 Spanish classrooms and is found as a prescriptive rule in L2 textbooks. According to this rule, the subject of an embedded subjunctive clause may not corefer with the subject of the matrix clause as shown in (2a). However, it turns out that there are exceptions to this generalization: coreference between matrix and embedded subjects is possible when the verb in the subjunctive clause is a modal (2b) or where the subjunctive clause is an adjunct (2c).

(2)   a.   *pro*$_i$ quiero   que *pro*$_{*i/j}$ vaya   a la fiesta
            want-1SG that go-*1/3 SG-SBJV to the party
            'I want *me/him/her to go to the party'

    b.   *pro*$_i$ espero que *pro*$_{i/j}$ pueda   hablar   con él   hoy
         hope-1sG   that   can-1/3sG to.speak with him today
         'I hope that I/he/she will be able to speak with him today'
    c.   *pro*$_i$ voy   a llamarte cuando *pro*$_{i/j}$ llegue
         am.going-1sG to call-you when   arrive-1/3 sG-sBjv
         'I will call you when I/he/she arrive(s)'

These exceptions to the general rule are not taught or presented in textbooks. Bruhn-Garavito set out to find out whether L2 learners of Spanish whose L1 is English follow the rule that they are taught or whether they are able to go beyond it. Results from a truth value judgment task showed that learners acquire the subtle contrasts between the different kinds of subjunctive clauses in the L2, a contrast which simply does not exist according to what the L2 learners are taught (but which does exist according to the intuitions of native speakers). On Bruhn-Garavito's account, their behaviour falls out from knowledge of Binding Principle B, a principle of UG.

    Along similar lines, Belikova (2008, 2013) looked at misleading classroom input involving the reflexive/reciprocal *se* in L2 French. Learners are typically instructed that *se* is an object clitic pronoun, with behaviour parallel to that of other object clitics (*me, te, le, la*, *nous, vous*, etc.). But, in fact, as Belikova shows, there are reasons to argue that *se* is not an object clitic but, rather, a detransitivity marker. *Se* differs from object clitics in several subtle ways, which are not taught. One of them involves the fact that *se* cannot occur in a passive, as in (3a), in contrast to true object clitics, which can, as in (3b).

(3) a. *Brigitte et   Marc se   sont présentés par Una
         Brigitte and Marc each-other are   presented by   Una
        'Brigitte and Marc were presented to each other by Una'
    b. Brigitte et   Marc nous sont présentés par Una
       Brigitte and Marc us   are   presented by   Una
       'Brigitte and Marc were presented to us by Una'

Using an acceptability judgment task, Belikova shows that English-speaking and Russian-speaking learners of L2 French are sensitive to the differences between *se* and other clitic pronouns. For example, they reject *se* in passives like (3a) while accepting the other clitics, like (3b). Belikova suggests that the L2ers fail to internalize a logically possible but linguistically incorrect generalization, the one that is taught. On Belikova's account, learners of French have in fact successfully reset a parameter of UG (the lexicon-syntax parameter (Reinhart & Siloni, 2005), despite misleading input.

    One final example comes from Halloran and Rothman (2015), who look at L2 Spanish object clitics. Once again, the issue is that some of the properties of

clitics that are instructed are in fact misleading. Spanish object clitics must appear preverbally if the verb is finite but may appear postverbally if it is nonfinite. Where there are multiple clitics, they must appear together, either preceding or following the verb – this property is referred to as clitic solidarity and is instructed; see (4a). However, it turns out that there are exceptions, involving exceptional case marking verbs. In such cases, the clitics may remain separated, one occurring with each verb (see (4b).

(4) a. Juan me la quería cantar ayer
         Juan me it wanted to.sing yesterday
         'Juan wanted to sing it to me yesterday'
     b. Juan me escuchó cantarla ayer
         Juan me heard   sing.it   yesterday
         'Juan heard me sing it yesterday'

These exceptions are not taught. On the basis of what is taught, one might expect L2 learners of Spanish to reject the order in (4b) where the two clitics do not occur together. Advanced learners of Spanish (but not beginners or intermediates) are sensitive to this exception, performing like native speakers in a grammaticality judgment task.

In all the above cases, learners manage to work out the relevant linguistic properties of the L2, even when the classroom and textbook input provides them with inaccurate information. This might, then, seem to suggest that misleading information is nothing to worry about and that the danger of it can be ignored. However, it is important to note that not all of the learners in the studies described above were successful in these contexts: some of them did not arrive at the relevant generalizations, or only arrived at them at advanced proficiency levels, raising the question of whether they would be able to do so if there was no specific input at all or if there was input that was not inaccurate.

There are other kinds of potentially misleading input as well, including inappropriate prosody. Goad and White (2008, 2009b) have shown that L2 learners of English with Mandarin or Turkish as L1s stress English articles inappropriately in pragmatically-neutral contexts. Goad and White (2008, 2009a) speculate that learners of English may produce stressed articles due to inappropriate input (stressed articles, slow speech rate, orthographic influence) from teachers who are not native speakers of the L2. This suggests that teachers could benefit from a better understanding of the properties of the L2 in the phonological domain as well.

To summarize, potentially misleading input which introduces inaccuracies about language structure is not uncommon. Even though some learners are able to override such input, this is not the case for all, suggesting the need for textbook writers and language teachers to be sensitive to the subtleties of the language they

are teaching and wary of making overly general claims. Linguistic descriptions derived from linguistic theory can help in this regard.

Linked properties

Over the years, a number of researchers approaching pedagogy from a linguistic perspective have addressed the question of what aspects of L2 acquisition are easy or hard to learn and, consequently, where language teaching might best focus in order to address or forestall learner difficulties. Slabakova's (2008, 2009, 2016) Bottleneck Hypothesis follows in this tradition; she identifies inflectional morphology as the crucial domain that instruction should focus on, as we shall see below.

Before turning to the Bottleneck Hypothesis, we consider some earlier theories which were concerned with the issue of what is easy and what is hard and which looked at (i) acquisition order, i.e., whether or not it makes sense to teach certain linguistic properties before others and, if so, in what order; and (ii) relatedness of linguistic phenomena, i.e., whether or not one can take advantage, from a pedagogical perspective, of properties that are assumed, on theoretical grounds, to cluster together.

Acquisition order

One such approach was exemplified by researchers who adopted a typological perspective on linguistic universals, exploring potential applications of the Noun Phrase Accessibility Hierarchy (NPAH) (Keenan & Comrie, 1977). The NPAH is concerned with relative clauses; it places relativization on an implicational hierarchy, such that the least marked type of relative clause is one with a relativized a subject (5a). Relativized objects are more marked (5b), objects of prepositions more marked again (5c).[1]

(5) a. The man who _ met me
     b. The woman who(m) I met _
     c. The person who(m) I sent a letter to _

Researchers exploring the implications of the NPAH for L2 instruction showed that it is beneficial to start by teaching relative clauses types that are more marked on the hierarchy; such instruction generalizes to less marked types, whereas the opposite does not hold (Doughty, 1991; Eckman, Bell, & Nelson, 1988; Gass, 1982). In other words, learners instructed on relative clause formation relating

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1. There are other relativizable positions on the hierarchy; these will not be discussed here.

to relativized objects of prepositions were successfully able to generalize relative clause structure to subject and object relativization but not vice versa. If marked means difficult, as is often assumed, then this approach makes the possibly counter-intuitive claim that it is beneficial to teach harder properties before easier ones. In other words, teaching a linguistic property lower on an implicational scale allows other (related) properties to fall out for free.

Another researcher who addressed issues relating to acquisition order as it might affect order of instruction was Pienemann (1984), with his Teachability Hypothesis, later developed into Processability Theory (see Pienemann, 2007). Pienemann's point is in some sense the opposite of that made by researchers investigating the NPAH. Pienemann argued that teaching of structure should follow acquisition sequences predicted by processing principles operating in conjunction with Lexical Functional Grammar (Bresnan, 2001), the version of generative grammar that he adopts. In other words, teaching should start with structures that are easiest to process.

Thus, seemingly contradictory claims were made with respect to which end of the spectrum one should teach. The researchers investigating NPAH suggested that one should teach what is hard (marked) and easier properties will not require instruction. Pienemann, in contrast, argued that one should teach easier properties before harder ones (but this is not in the context of linguistic properties falling on an implicational markedness scale).

More recently, Bruhn de Garavito (2013) suggests that a consideration of generative L2 research on Spanish clitic pronouns provides insights into what should be taught about clitics and when. She reviews how 15 textbooks commonly used as introductory texts in North America deal with clitics and reports that too much information about clitics is provided in early stages of L2 Spanish, much of it in the form of explicit rules (particularly on differences between direct and indirect object clitics). Instead, she argues, textbook writers and teachers could use insights derived from generative L2 research to suggest which properties of clitics can be taught early on and which left until learners are more proficient (for example, clitic positions in restructuring contexts).

At the other end of the scale, so to speak, Valenzuela and McCormack (2013) look at Spanish clitic properties that are late acquired (if at all). They consider clitics as they occur in topicalization structures, the so-called clitic left dislocation structure (CLLD); see (6a). CLLD contrasts with contrastive left dislocation (CLD), as shown in (6b). The crucial difference between them is that a clitic (in this case, *lo*) appears in (6a) but not (6b). This difference is due to the fact that the topic in (6a) (*Juan*) is specific, whereas it is non-specific in (6b) (*manzanas*).

(6) a. A Juan$_i$ lo$_i$ conocí   en París cuando era   estudiante
         Juan   him met-1ps in Paris when   was-1ps student
         'John, I met in Paris when I was a student'
     b. Manzanas, como   todos los días
         Apples,   eat-1ps all   the days
         'Apples, I eat everyday'

As Valenzuela and McCormack point out, syntax (position of clitics, left disloca-
tion) and discourse (topicalization) are implicated here, as well as a semantic con-
straint, in that the dislocated topic must be specific if a clitic is present. Data from
near native speakers of Spanish are reported which suggest that L2 Spanish speak-
ers' knowledge of the syntax of CLLD does not differ from native speakers; at the
same time, they fail to restrict CLLD to specific topics. Valenzuela and McCormack
suggest that teachers should be made aware of how this semantic property crucial-
ly affects CLLD and could then ensure that examples and instruction on specificity
are included to ensure the acquisition of this less obvious property.

     In sum, a consideration of possible ordering effects amongst linguistic proper-
ties that are in some way related to each other may be useful in determining issues
like order of presentation of material, and whether certain linguistic properties in
fact need to be presented by means of classroom intervention.

Parametric clusters

In this section, we consider another way in which relatedness of linguistic proper-
ties might have pedagogical implications. In generative grammar, the assumption
has been that parameters of UG bring together clusters of properties associated
with particular parameter settings. If so, it should presumably be the case that
acquiring one aspect of a parametric cluster would trigger the acquisition of the
related properties. Thus, it might be expected that one could teach one of the prop-
erties and have the others emerge 'for free', in other words, without the need for
instruction on each of the other properties.

     In fact, early generative research on parameters in L2 was not very successful
in providing evidence for clustering. For example, White (1985) found that, in
transferring null subjects from L1 Spanish to L2 English, Spanish speakers did not
appear to transfer other aspects of the null-subject parameter (subject postposing
and absence of *that-trace* effects). Furthermore, in the studies on transfer of verb
raising discussed above, the control group was instructed on English question for-
mation. Lack of verb raising in English questions is related to lack of verb raising
over adverbs, yet the children instructed on question formation did not generalize
lack of verb raising to the context they were not taught (namely adverb placement).

A somewhat more successful demonstration of clustering and its relationship to classroom input is provided by Slabakova (2002). This was an investigation of the compounding parameter proposed by Snyder (2001). The parameter has two values; in languages like English the following cluster of properties is found: productive noun-noun compounding (e.g. *tango shoes*), double objects (*Mary gave John a book*), verb particle constructions (*Peter looked up the answer*) and resultatives (*The waiter wiped the tables clean*). For the alternate setting (e.g. Spanish), these constructions are not permitted.

Slabakova looked at whether English-speaking learners of Spanish would lose the various syntactic and morphological properties associated with the English value of the parameter and whether they would be lost together. Slabakova argues that the English setting of the parameter is the superset, since it allows a range of constructions not permitted in languages like Spanish. Hence, these learners have to retreat to a subset grammar, so negative evidence might be necessary. Low proficiency learners accepted English-like constructions that are ungrammatical in Spanish to a considerable extent, suggesting transfer of the L1 setting. Intermediate and advanced groups were more accurate as a whole, but all groups had particular problems with resultatives, continuing to accept them in Spanish while rejecting the other constructions. It turned out that participants had been given explicit instruction on the impossibility of double objects and N-N compounds in Spanish. An analysis of the performance of individual subjects shows that 39% of the advanced group demonstrated knowledge of the whole cluster even though they had only been instructed on part of it. While this study did not set out to test the precise effects of negative evidence relating to part of a cluster (in other words, did not involve a pretest/posttest treatment or an uninstructed control group), the results are nevertheless suggestive of the ability of learners to generalize beyond what they were taught to other aspects of the cluster.

Some of the linguistic clusters that have been proposed in the light of parameter theory have turned out not to work well, at least as far as L2 is concerned. Nevertheless, the idea that certain properties of language must be connected is surely an attractive one, with the implication that certain linguistic properties do not need to be explicitly taught but can 'piggy-back' on others.

The Bottleneck Hypothesis

In proposing the Bottleneck Hypothesis, Slabakova points to problems created by morphology, particularly where there are differences in how languages map meaning onto morphological form (e.g. Slabakova, 2006). Of course, morphological forms have long been identified as problematic in L2 (see DeKeyser, 2005) and

they are frequently taught. What, then, distinguishes the Bottleneck Hypothesis from earlier conceptions of difficulties associated with morphology? What does the Bottleneck Hypothesis contribute to our understanding of this already well-known problem over and above what has already been identified?

The Bottleneck Hypothesis draws on the assumption that parametric variation is determined by items in the functional lexicon: languages vary in terms of the grammatical features they realize. Slabakova stresses the importance of understanding the relationship between morphology and other components of the grammar, particularly syntax and semantics. What has to be learned is how the morphology expresses syntactic and semantic features; particular problems may arise when the L1 and L2 differ in how they realize various concepts morphologically.

In determining what aspects of morphology might be particularly difficult, there is a certain similarity to the Feature Reassembly Hypothesis of Lardiere (2008, 2009), as Slabakova (2016) points out. Like Lardiere, Slabakova identifies as most problematic those situations where there are morphological mismatches between the two languages, such as when features that are realized on one item in the L1 must be split into more than one item in the L2 or, conversely, features that are realized on multiple items in the L1 must be combined into one item in the L2.

For example, Slabakova (2006) outlines differences between how English and Spanish use morphology to realize aspectual meanings of events that are habitual, ongoing, or completed. The assumption is that L2 learners will know these universally available aspectual meanings. The problem that arises is that the two languages differ in the morphology used to express the meanings. In English, the imperfective is used for ongoing events (7a), while the preterite expresses habitual events (7b) or completion (7c). In Spanish, on the other hand, the imperfective expresses ongoing events and habitual events (7d), while the preterite is used only to express completion (7e).

(7) a. Felix was robbing a person in the street
     b. Felix robbed people in the street when he was young
     c. Felix robbed a person in the street
     d. Guillermo robaba   en la   calle
         Guillermo rob-IPFV in the street
         'Guillermo habitually robbed (people) in the street'
         or 'Guillermo was robbing someone in the street'
     e. Guillermo robó   en la   calle
         Guillermo rob-PRT in the street
         'Guillermo robbed (someone) in the street'

In other words, an English-speaking learner of Spanish or a Spanish-speaking learner of English has to work out the differences in how verbal morphology expresses these aspectual contrasts.

In a study of these phenomena in L2 Spanish, Montrul and Slabakova (2002) found that intermediate learners who were inaccurate in their use of the Spanish morphological forms (i.e., who did not consistently make the relevant distinctions in their choices between preterite and imperfective forms in a contextualized task) were unable to successfully perform on an aspectual judgment task which tested the differences in meaning. On the other hand, intermediate participants who were accurate on the morphology test were also accurate on the aspectual interpretation task (as were advanced learners). In other words, the morphology was holding up the realization of the semantic differences for some of the learners, creating a bottleneck. Thus, it should be beneficial to focus on the morphological forms in the classroom, for example, by means of explicit instruction on the relevant form-meaning relationships or by providing enhanced input which helps the learner to associate morphological forms with their meanings.

Where the L1 and the L2 realize the same functional features on the same lexical items, there should presumably be no morphological bottleneck. A case in point is the definiteness feature, realized on definite and indefinite articles in languages like English and Spanish. Ionin, Zubizarreta and Maldonado (2008) showed that L2 learners whose L1 (Russian) does not express definiteness through an article system fluctuate as they try to work out what semantic features determine article choice (definiteness or specificity), whereas Spanish-speaking learners of English, even beginners, did not have this problem. In other words, Russian speakers, but not Spanish speakers, could presumably benefit from instruction about the relationship between the meanings and forms of English articles.

The Bottleneck Hypothesis, then, draws on precise linguistic descriptions as to the nature of what is represented by the morphology. As far as ease and difficulty are concerned, Slabakova identifies situations in which the L2 morphology might be particularly difficult (because of L1/L2 mismatches); drawing on precise linguistic descriptions allows for the identification of differences that might be missed under more general approaches, such as contrastive analysis.[2] In such situations, extra instructional effort may be beneficial. Language teachers and textbook writers can draw on linguistic descriptions to help determine what aspects of linguistic form to focus on; the decision as to how to do so is not dependent on linguistic theory. As Slabakova (2016, p. 409) puts it, the contribution of the Bottleneck Hypothesis

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2. Slabakova (2016, Chapter 13) offers a more detailed discussion of how the Bottleneck Hypothesis differs from other approaches to problems with L2 morphology.

is: 'to demonstrate that the choice of what to focus on, process or practice should stem from consideration of linguistic structure.'

Conclusion

In conclusion, here have been various attempts over the years to identify, on a linguistic basis, those properties of the L2 that might deserve special attention from a pedagogical point of view, or, conversely, that might not need such attention. A number of linguistic properties have been identified as being potentially difficult to acquire and others as not requiring instruction. Researchers have suggested benefits for teachers and textbook writers of being aware of how current linguistic analyses and research results might inform language teaching and syllabus organization.

At the same time, it is not reasonable to expect language teachers to keep themselves up-to-date with the many different linguistic analyses that might potentially be beneficial. There is a gap between generative linguistic theory and language teaching that needs to be bridged; this is an area where researchers working on L2 from a generative perspective can play a mediating role, as pointed out by Slabakova, Leal, and Liskin-Gasparro (2015). Indeed, generative L2 researchers have increasingly become aware of their potential contribution in this regard, trying to frame their research (or that of others) in such a way that findings can be considered from the point of view of classroom implementation. For example, Kizu (2013) shows how recent linguistic approaches to Japanese null subjects suggest that L2 teaching of null arguments must be much more nuanced than it has been in the past; she offers suggestions as to how this might be achieved via a particular focus on null subjects with 1st or 2nd person referents, the ones identified as by linguists as being linguistically more complex than those with 3rd person referents.

One final lesson from this line of research is that communicative language teaching is not enough (Slabakova, 2016; Whong, 2011, 2012, amongst others). Sometimes there is a need to focus on form. Recognition of this need is not new and comes from a variety of perspectives (see papers in Doughty & Williams, 1998). Nevertheless, sophisticated linguistic descriptions can help to identify situations where focus on form is likely to be beneficial. At the same time, it is important to reiterate that uncovering potential applications for language teaching is not a requirement of research on theoretical linguistics or on L2 acquisition. These have their own domains of inquiry, relating to the nature of grammar and of interlanguage competence. While insights from these different domains can be useful, such insights are, ultimately, a bonus and not a requirement of research on L2

acquisition, regardless of the theoretical orientation of the research. Nevertheless, the growing attention to possible applications and implications of linguistic theory and L2 acquisition theory is welcome.

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