The Morphosyntax of Japanese/English Code-Switching: An Optimality-Theoretic Approach*

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1 Introduction

The study of the grammatical properties of intrasentential code-switching[1] (CS), the alternate use of at least two codes (languages or dialects) within the same clause, has provided interesting insights into the nature of bilinguality. Earlier studies on CS had a tendency to pursue the speculation that CS resulted from the performance of imperfect bilinguals and posited that ideal bilingual speakers made no intrasentential mixture, to borrow Weinreich's (1953) frequently cited phrase, "certainly not within a single sentence" (1953:73). Now that CS is widely studied in both formal and functional perspectives, however, there is no disagreement on this point that intrasentential CS is a common (socio)linguistic phenomenon that is observable in stable bilingual communities. As research on the grammatical aspect of CS makes progress, intrasentential CS is well known to exhibit structural regularities rather than a haphazard mixture of linguistic systems.

What are the structural regularities underlying intrasentential CS? Over the past few decades, several syntactic constraints have been proposed to capture the regularities based on the empirical generalizations of particular language pairs (e.g. Poplack 1980; Joshi 1985; Di Sciullo, Muysken & Singh 1986; Myers-Scotton 1993; Belazi, Rubin & Toribio 1994; MacSwan 1999). A problem in these studies is that there has been a recurrence of the spiral of constraints and counterexamples: constraints posited in one study using one set of language pairs appear to be violated in another study using another set of language pairs.

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[1]'Code-mixing' is another term for this phenomenon in the literature. It is difficult to make a clear distinction between 'code-switching' and 'code-mixing'; both terms are often used interchangeably, and the definitions of them vary depending on researchers. This study uses the term 'code-switching', which has come into wider use in the literature.

Another problem is that most previous analyses attempt to account for the regularities by postulating a third grammar. A 'third grammar' is defined as a CS-specific mechanism, which cannot be applied to any other linguistic phenomenon. Such a mechanism is so superfluous and redundant that a third grammar should be shaved off with Occam's razor in the interests of theoretical parsimony.

The idea that no third grammar is required in CS has developed from earlier seminal studies: an early investigation made by Pfaff (1979) points out that "it is unnecessary to posit the existence of a third grammar to account for the mixed utterances" (1979:314). Lederberg & Morales (1985) suggest that "the constraints of code switching are based on the integration of the grammars of the two code-switched languages rather than on the creation of a third grammar" (1985:113). MacSwan (1999) also concludes that "nothing constrains code switching apart from the requirements of the mixed grammars" (1999:234). Recent CS studies have reflected this view, shifting their research interest from the 'constraint-oriented approach' to the 'constraint-free approach' (cf. Putnam & Couto 2009).

The objective of the present paper is to explain the bilingual linguistic mechanism that constrains the (morpho)syntactic behavior of intrasentential CS without recourse to a third grammar. Specifically, this paper aims (1) to explore the possibility of constructing a theoretical model of the bilingual language faculty on the basis of the framework of Optimality Theory (OT) (Prince & Smolensky 1993) and (2) to demonstrate that the idea of Sympathy Theory (McCarthy 1999), adapted for OT syntax in Müller (2002), can be applied to explaining the phenomenon of morphemic CS in Japanese/English bilingualism.

This paper is organized as follows: in the next section, I review the previous work on the formal aspect of CS, focusing on Myers-Scotton (1993) and MacSwan (1999). In Section 3, I propose an Optimality-Theoretic model of CS to solve the above research problems. In Section 4, I flesh it out with a case study of case conflicts in Japanese/English CS. Finally, Section 5 summarizes this paper.

2 Previous Studies

In this section, I give a review of the previous research on intrasentential CS, focusing on two influential theoretical approaches, Myers-Scotton's Matrix Language Frame Model and MacSwan's Minimalist Approach, and demonstrate that such accounts fail to correctly predict morphemic CS, a phenomenon in which one language offers affix-like elements to attach to lexical items provided from another.

2.1 Myers-Scotton's Matrix Language Frame Model

The Matrix Language Frame (MLF) Model proposed by Myers-Scotton (1993, 1995) recognizes an asymmetric relation between the two languages involved in intrasentential CS. Distinguishing between the matrix language (ML) and the embedded language (EL), the MLF model gives weight to the morphosyntactic framing of the ML in CS construction, as is stated in (1) below:

(1) The ML Hypothesis
The ML determines the morphosyntax of ML + EL constituents.
(from Myers-Scotton 1995:239)

The MLF model thus requires that the ML delineate the positions for content morphemes and system morphemes[2] at S-structure. This requirement resolves itself into the following two principles:

(2) The Morpheme Order Principle
Surface morpheme order will be that of the ML in ML + EL constituents.

(3) The System Morpheme Principle
All 'syntactically or externally relevant' system morphemes come only from the ML in ML + EL constituents.
(from Myers-Scotton 1995:239)

The Morpheme Order Principle in (2) states that morphemes within a bilingual utterance must follow the order of the ML. An example of Swahili/English CS is taken to illustrate this principle. (4a) below is not acceptable due to the precedence of the Swahili modifier 'mbili [two]' over its English head 'plate', which exhibits the morpheme order of English, the EL. In contrast, (4b) is well-formed for the reason that it follows the order of Swahili, the ML:

(4) a. *Anakula mbili *plate* ...[3]
b. Anakula *plate* mbili ...
'He eats two plates ...'
(from Myers-Scotton 1995:244)

The System Morpheme Principle in (3) above states that every system morpheme in a bilingual utterance must originate from the ML. See another example of Swahili/English CS in (5) below. In (5), all of the verbal conjugations, i.e., system morphemes, attached to the English V 'behave' come from Swahili, the ML:[4]

[2]The distinction between content and system morphemes is grounded on the distinctive features [±Quantifier]/[±potential θ-role assigning/receiving category]/[±θ-role assigner/receiver]. We may leave the details to Myers-Scotton (1995:240-42).

[3]Following academic conventions, the italicized items in the examples indicate "switched" elements.

[4]The following abbreviations are used to annotate the examples:

ACC = accusative	NOM = nominative
DAT = dative	PP = past participle
GEN = genitive	PST = past tense
INFIN = infinitive	3PL = third person plural subject agreement
LOC = locative	3Ss = third person singular subject agreement

(5)	... Unaanza	ku-*behave*	kama watu wa huko	wa-	-na-	-vyo-	-*behave*
		INFIN-		3PL	NON-PST	MANNER	

'... You being to behave as people of there behave.'

(from Myers-Scotton 1995: 244)

However, the matter is not quite as simple as the MLF model suggests. Look at the sentence in (6) below, in which the Japanese locative particle '*de*' is affixed to the English N 'basement'. In light of the relative frequency of morphemes from the participating languages, which is one of Myers-Scotton's criteria for identifying the ML[5], it is obvious that the ML of (6) is English. The Morpheme Order Principle is then not capable of explaining the well-formedness of (6) since the mixed constituent 'basement *de*' does not follow the order of English but that of Japanese:

(6)	I slept with her basement	*de.*
		LOC

'I slept with her in (the) basement.'

(from Nishimura 1985:52, 117)

See another counterexample in (7) below, in which the English genitive morpheme ''s' is switched to the Japanese equivalent '*no*'. Again, the frequency-based criterion proves that the ML of (7) is English. The System Morpheme Principle then requires all the system morphemes in (7) to derive only from English:

(7)	I don't know the bus stop	*no*	name.
		GEN	

'I don't know the bus stop's name.'

(from Morimoto 1999:24)

However, the facts are different from what the principle expects. The underlined items in (8) below are considered to be system morphemes since they have the feature [+Quantifier] (i.e. negative 'n't', determiner 'the', and possessive 'no') or [-θ-role assigner] (i.e. 'do' verb). Note that there appears a Japanese system morpheme as well as English system morphemes in (8). The System Morpheme Principle is not consistent with this distribution:

(8) I don't know the bus stop-*no* name.

[5] Myers-Scotton (1995) also lists sociolinguistic and psycholinguistic criteria, but in this paper I limit the discussion to the intrasentential or morphosyntactic criterion.

2.2 MacSwan's Minimalist Approach

In his minimalist approach, MacSwan (1999, 2004) applies the idea of Chomsky's (1995) Minimalist Program to his analysis of intrasentential CS. Pursuing the minimal use of theoretical assumptions, he proposes what he calls the PF disjunction theorem. According to this theorem, CS in the syntactic operation is possible, whereas CS in the phonological operation is disallowed because the phonological component of the computational system for human language (C_{HL}) is architecturally different from the syntactic counterpart. This point is summarized as the theorem below:

(9) *PF Disjunction Theorem*

i. The PF component consists of rules/constraints which must be (partially) ordered/ranked with respect to each other, and these orders vary cross-linguistically.

ii. Code switching entails the union of at least two (lexically-encoded) grammars.

iii. Ordering relations are not preserved under union.

iv. Therefore, code switching within a PF component is not possible.

(from MacSwan 1999:188)

This theorem thus predicts that CS below X^0 (i.e. below the word level) is not permitted since X^0s are the input to PF. The following examples of Spanish/English CS serve as an illustration of the above theorem. (10a) is unacceptable since the Spanish verbal morpheme is attached to the English V stem. This ill-formed switch is predicted by the theorem in (9) above because they represent an X^0-level element. In contrast, (10b) is well-formed due to the fact that the English V stem is phonologically integrated into Spanish, the language of the inflectional morpheme. In this case, no switching occurs within X^0:

(10) a. *Juan *eat* -ió
  -PST/3Ss
 'Juan ate.'

 b. Juan parqueó su coche
  park-PST/3Ss his car
 'Juan parked his car.'

(from MacSwan 2004:300-1)

However, there are counterexamples to his theorem. In (11a) below, the German past participle prefix 'ge-' is attached to the English past participle form '*bothered*'. In (11b) and

(11c), the Japanese case morphemes '*-o*' and '*-ni*' are affixed to English Ns, respectively. Because 'affixation is a phonological operation' (MacSwan 2004: 301), these examples produce X^0-internal CS, which disproves the PF disjunction theorem[6]:

(11) a. sie haben einfach nicht ge#*bother-ed.*
they have simply not PP#bother-PP
'They have simply not bothered.'
(from Eppler 2006:121)

b. She spent her own money *o.*
ACC
'She spent her own money.'
(from Nishimura 1997:117)

c. Look at the things she buys for Sean *ni.*
DAT
'Look at the things she buys for Sean.'
(from Nishimura 1997:119)

3 Proposal: An Optimality-Theoretic Model of Code-Switching

So far we have seen that previous attempts to impose specific, *universal* constraint(s) on intrasentential CS failed to draw a generalization across language pairs; there is little agreement as to the question of where (within a clause/sentence) intrasentential CS occurs or does not occur. This failure supports an assumption that CS entails no third grammar. At the same time, however, bilingual speakers mix codes with structural regularities. If the 'no third grammar' assumption is correct, how do we interpret the fact that bilinguals switch codes in a consistent way without a third grammar?

The key to resolving this problem, in fact, has been suggested by a number of researchers. As was discussed earlier, Lederberg & Morales (1985) indicate that "the constraints of code switching are based on the integration of the grammars of the two code-switched languages rather than on the creation of a third grammar" (1985:113). Similarly, MacSwan (1999) postulates that "[c]ode switching entails the union of at least two (lexically-encoded) grammars" (1999:188). The notions of "integration" and "union" go to the very heart of the problem; one possible explanation may be that intrasentential CS occurs when the two grammars

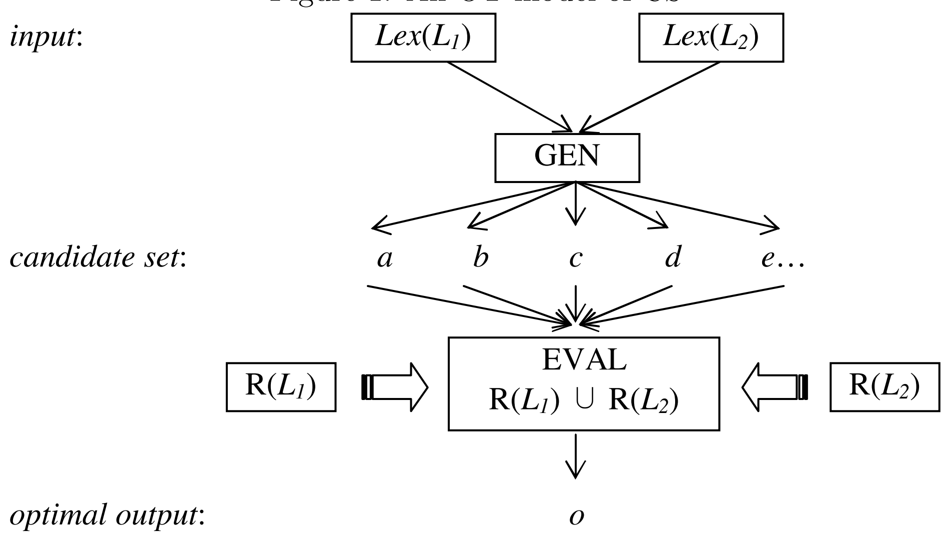
[6] MacSwan might claim that his PF Disjunction Theorem is not included in the category of a 'third grammar' for the reason that it was 'deduced from independently discovered facts about the language faculty' (MacSwan 1999: 188). However, this argument is open to question. First, the premises that his theorem assumes are not necessarily accepted truths. Second, his conclusion in the theorem that CS within a PF component is not possible cannot be applied to any other linguistic phenomenon, thereby functioning as a CS-specific constraint.

amalgamate into one. Granting this explanation, how do we characterize the "integration" or "union" of the two grammars?

The present paper suggests that the structural properties of intrasentential CS can be analyzed within the framework of Optimality Theory (OT) (Prince & Smolensky 1993). Specifically, in this paper, I propose that intrasentential CS arise as a result of interaction/reconciliation between (at least) two different grammars. The ideas of constraint interaction and conflict resolution developed in OT provide an advantageous framework within which to characterize CS as interaction and optional satisfaction between two incompatible grammatical systems. Such a hypothesis makes it possible to regard intrasentential CS as the "integration" or "union" of the two grammars involved.

The proposed OT model of CS is shown in Figure 1:

Figure 1: An OT model of CS



Bilingual speakers have two lexicons, *Lex*(L_1) and *Lex*(L_2). In mixing codes, the computational system for human language (C_{HL}) selects lexical items from among both *Lex*(L_1) and *Lex*(L_2) and inputs them into the Generator (GEN), which creates a candidate set of potential outputs for a given input. According to the linguistic information encoded in each inputted lexical item, GEN Merges and Moves them to create a set of potential syntactic structures. The Evaluator (EVAL) then attempts to pick up the most optimal output from among the candidate set by using the language particular rankings of constraints. In monolingual speakers, EVAL normally consists of only one constraint ranking. On the other hand, bilinguals have two constraint rankings R(L_1) and R(L_2). Due to this fact, in bilingual CS, EVAL is assumed to be the union of the two rankings (R(L_1) $\cup$ R(L_2)). In intrasentential CS, however, EVAL sometimes encounters a difficulty in finding the optimal output because there are two grammars (viz. constraint rankings), which have a possibility of conflicting with each other. In this paper, I assume that this union is an intermediate, dynamic grammatical system on which bilinguals build their own constraint ranking to avoid conflicts between the two constraint rankings.

This model enables bilingual speakers to establish temporary, partial, but systematic reordering of constraint rankings to resolve conflicts in two grammars. In addition, this model uses more general, independently-motivated constraints, which are originally proposed to account for monolingual utterance. Accordingly, this model requires no syntactic constraints that are specific to CS at all, offering no support for the third grammar in CS.

4 Case

In this section, I provide a case study of case conflicts in Japanese/English CS. Particularly, I discuss the two Japanese case particles *ga* and *o* that emerge in English sentences and analyze them within the framework of Optimality Theory (OT), demonstrating that the phenomenon can be accounted for by the interactions of more general, independently motivated constraints rather than the creation of a CS-specific third grammar.

4.1 Case Conflicts

The examples in (12a) and (b) below exhibit morphemic CS, a phenomenon in which one code offers affix-like elements to attach to lexical items provided from another code:

(12) a. She spent her own money *o.*
ACC

b. Camp *seikatsu* *ga* made him rough.
life NOM
'(The) camp life made him rough.'

(from Nishimura 1997:117-120)

In (12a), the English direct object 'her own money' is marked with the Japanese accusative case particle *o*. In (b), on the other hand, the Japanese nominative case particle *ga* is affixed to the hybrid N compound camp-*seikatsu*. Then, a question arises: how do bilinguals generate these morphemic CS utterances?

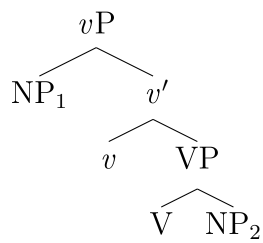
4.2 Limitations and Assumptions

This study presupposes that there is a distinction between abstract case and morphological case. It also postulates that morphological case arises in syntactic derivations; i.e. there are no morphological case markers in syntactic inputs or numerations.[7]

[7]This postulation is controversial. Some researchers claim that morphological case is given pre-syntactically. I leave it an open question, and in this paper I take the standpoint that morphological case arises as a result of syntactic operations (c.f. Woolford 2001).

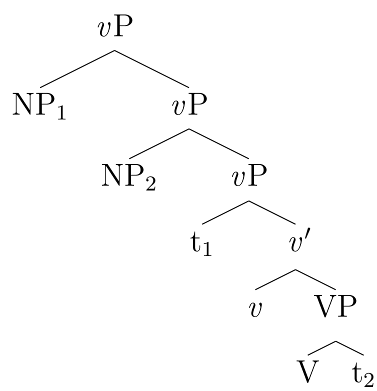
In addition, this paper assumes that different word orders (e.g. SVO, SOV) are derived from a single underlying phrase structure, i.e. Specifier-Head-Complement (cf. Kayne 1994, Stabler 1997). This paper limits the discussion to the phase of *v*P. According to Kayne's (1994) and Stabler's (1997) proposals, we assume that English and Japanese underlying orders are the same, as shown in (13) below:

(13)



We also assume that SOV languages such as Japanese undergo scrambling and that both NP1 and NP2 move to the edge of *v*P, as is shown in (14) below:

(14)



4.3 Constraint Interactions

This paper adopts the following constraints, which are slightly modified from Müller's (2002) proposal:

(15) a. Case:
An NP at the edge[8] of *v*P has morphological case.

b. Dep:
Material of the output must be part of the input.

c. Scr:
An NP must move to the edge of *v*P.

d. Stay:
Movement is not allowed.

(slightly modified from Müller 2002:13, 22)

[8]Müller's definition of 'edge' is slightly different from Chomsky's. It refers to an outer specifier(s) of XP.

Before discussing morphemic CS, let us see how these constraints interact with each other in English and Japanese. First, we see how interaction among the above constraints characterizes English abstract case. English does not exhibit scrambling. Hence, SCR is ranked below STAY. As far as case constraints are concerned, there is no need to rank them for the reason that DEP selects the most optimal output (O_1: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_2]]$) from among the rest of the candidates (O_1-O_4) without the assistance of CASE. Therefore, CASE and DEP have the same rank. This can be seen in the tableau in Table 1 below:

Table 1: English (Abstract Case)

	Input: V, NP_1, NP_2,...	STAY	SCR	CASE	DEP
☞	O_1: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_2]]$		**		
	O_2: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_2]]$		**		*!
	O_3: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_{2,acc}]]$		**		*!
	O_4: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_{2,acc}]]$		**		*!*
	O_5: $[_{vP}$ NP_2 NP_1 v $[_{VP}$ V $t_2]]$	*!	*	*	
	O_6: $[_{vP}$ NP_2 $NP_{1,nom}$ v $[_{VP}$ V $t_2]]$	*!	*	*	*
	O_7: $[_{vP}$ $NP_{2,acc}$ NP_1 v $[_{VP}$ V $t_2]]$	*!	*		*
	O_8: $[_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v $[_{VP}$ V $t_2]]$	*!	*		**
	O_9: $[_{vP}$ NP_1 NP_2 t_1 v $[_{VP}$ V $t_2]]$	*!*		**	
	O_{10}: $[_{vP}$ $NP_{1,nom}$ NP_2 t_1 v $[_{VP}$ V $t_2]]$	*!*		*	*
	O_{11}: $[_{vP}$ NP_1 $NP_{2,acc}$ t_1 v $[_{VP}$ V $t_2]]$	*!*		*	*
	O_{12}: $[_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v $[_{VP}$ V $t_2]]$	*!*			**

On the other hand, Japanese is an SOV language with morphological case. Therefore, the output O_{12} $[_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v $[_{VP}$ V $t_2]]$ has to be selected as most optimal. In order for O_{12} to be most optimal, first, SCR must outrank STAY so that the structures with both nominal constituents scrambled (O_9-O_{12}) can survive. In addition, CASE has to dominate DEP in order that the output with morphological case realized may be selected, as can be seen in the tableau in Table 2 below:

Table 2: Japanese (Morphological Case)

	Input: V, NP_1, NP_2,...	SCR	STAY	CASE	DEP
	O_1: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_2]]$	*!*			
	O_2: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_2]]$	*!*			*
	O_3: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_{2,acc}]]$	*!*			*
	O_4: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_{2,acc}]]$	*!*			**
	O_5: $[_{vP}$ NP_2 NP_1 v $[_{VP}$ V $t_2]]$	*!	*	*	
	O_6: $[_{vP}$ NP_2 $NP_{1,nom}$ v $[_{VP}$ V $t_2]]$	*!	*	*	*
	O_7: $[_{vP}$ $NP_{2,acc}$ NP_1 v $[_{VP}$ V $t_2]]$	*!	*		*
	O_8: $[_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v $[_{VP}$ V $t_2]]$	*!	*		**
	O_9: $[_{vP}$ NP_1 NP_2 t_1 v $[_{VP}$ V $t_2]]$		**	*!*	
	O_{10}: $[_{vP}$ $NP_{1,nom}$ NP_2 t_1 v $[_{VP}$ V $t_2]]$		**	*!	*
	O_{11}: $[_{vP}$ NP_1 $NP_{2,acc}$ t_1 v $[_{VP}$ V $t_2]]$		**	*!	*
☞	O_{12}: $[_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v $[_{VP}$ V $t_2]]$		**		**

In summary, as far as case is concerned, English and Japanese have the following constraint rankings, respectively, as are shown in (16) below:

(16) a. English (Abstract Case):
STAY >> SCR >> {CASE, DEP}

b. Japanese (Morphological Case):
SCR >> STAY >> CASE >> DEP

Obviously, these constraint rankings conflict with each other, and they do not enable bilinguals to generate such outputs as O_2: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_2]]$ and O_3: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_{2,acc}]]$, i.e., a mixed utterance in which a Japanese morphological case marker emerges in an English sentence. Another question then arises: how do bilinguals reconcile these conflicts in intrasentential CS?

4.4 Sympathy Theory

The present paper suggests that the idea of Sympathy Theory can be applied to solving this problem. Sympathy Theory was originally developed in McCarthy (1999) as a solution to phonological opacity. The chief advantage of Sympathy Theory is that it can make reference to an intermediate derivational stage, which is often required in a rule-based, serial phonological derivation. The problem with standard versions of Optimality Theory that are inherently non-derivational is that it is difficult to represent such an effect as phonological opacity. As a solution to this problem, McCarthy (1999) suggests that although standard OT has no intermediate stage between an input and an (optimal) output, all the properties related to an intermediate stage can be represented in a suboptimal output that forms part of the same candidate set as the optimal output. This suboptimal (but failed) output, which is called the sympathy candidate, fulfills the same function as an intermediate representation in the derivational approach. This type of output/output faithfulness is called 'sympathy (❀)'.

There are two tools that play an important role in this theory: 'selector' and 'sympathy constraint'. 'Selector' is a normal input/output constraint that functions as selecting an intermediate representation, which is called 'sympathy candidate'. This sympathy candidate does not have to be most optimal in the whole candidate set. On the other hand, 'sympathy constraint' is an output/output faithfulness constraint, which compares the rest of the candidates with the sympathy candidate rather than the input. This apparatus enables us to choose the most optimal CS construction among the candidate set created by GEN.

This paper proposes that the following two function as selector and sympathy constraint, respectively:

(17) a. SCR (selector):
An NP must move to the edge of *v*P.

b. ❀MAXCASE (sympathy constraint):
Morphological case of the sympathy candidate must be preserved.

(slightly modified from Müller 2002: 36)

We saw the constraint in (17a) earlier, but this paper suggests that SCR, in fact, works as a selector as well, which now has the function of dividing the candidate set into two subsets: the candidates with all NPs in an edge position and the candidates with at least one NP *in situ*.[9] On the other hand, the sympathy constraint in (17b) demands that the candidates with NPs *in situ* be faithful to the sympathy candidate in terms of morphological case realization.

Let us see how these sympathy-relevant constraints work to generate morphemic CS. See the tableau in Table 3 below, which represents Japanese/English morphemic CS in which both Japanese nominative and accusative case particles emerge:

[9] Müller (2002) proposes the following constraint as a selector:

(18) EDGEPHASE:
An NP must be at the edge of a phase.

(Müller 2002:36)

In this context, however, the function of the above constraint is, in effect, the same as that of SCR. Taking into account the principle of theoretical parsimony, this paper therefore proposes that both of them be unified and that SCR serve as both functions.

Table 3: Japanese/English CS (Japanese NOM & ACC emerging in English)

	Input: V, NP_1, NP_2,…	STAY	SCR	CASE	MAXCASE	DEP
☛	O_1: $[_{vP}\ NP_1\ v\ [_{VP}\ V\ NP_2]]$		**		*!*	
	O_2: $[_{vP}\ NP_{1,nom}\ v\ [_{VP}\ V\ NP_2]]$		**		*!	*
	O_3: $[_{vP}\ NP_1\ v\ [_{VP}\ V\ NP_{2,acc}]]$		**		*!	*
☞	O_4: $[_{vP}\ NP_{1,nom}\ v\ [_{VP}\ V\ NP_{2,acc}]]$		**			**
	O_5: $[_{vP}\ NP_2\ NP_1\ v\ [_{VP}\ V\ t_2]]$	*!	*	*	**	
	O_6: $[_{vP}\ NP_2\ NP_{1,nom}\ v\ [_{VP}\ V\ t_2]]$	*!	*	*	*	*
	O_7: $[_{vP}\ NP_{2,acc}\ NP_1\ v\ [_{VP}\ V\ t_2]]$	*!	*		*	*
	O_8: $[_{vP}\ NP_{2,acc}\ NP_{1,nom}\ v\ [_{VP}\ V\ t_2]]$	*!	*			**
	O_9: $[_{vP}\ NP_1\ NP_2\ t_1\ v\ [_{VP}\ V\ t_2]]$	*!*		**	**	
	O_{10}: $[_{vP}\ NP_{1,nom}\ NP_2\ t_1\ v\ [_{VP}\ V\ t_2]]$	*!*		*	*	*
	O_{11}: $[_{vP}\ NP_1\ NP_{2,acc}\ t_1\ v\ [_{VP}\ V\ t_2]]$	*!*		*	*	*
❀	O_{12}: $[_{vP}\ NP_{1,nom}\ NP_{2,acc}\ t_1\ v\ [_{VP}\ V\ t_2]]$	*!*				**

First, SCR, which now functions as a selector, divides the candidate set into two subsets: the subset that respects the scrambling effect (the candidates that have all the NPs in an edge position (O_9-O_{12})) and the subset that disrespects it (the candidates that have at least one NP in situ (O_1-O_8)). Among the candidates that respect the selector SCR, the optimal candidate has morphological case if CASE outranks DEP. The output O_{12}: $[_{vP}\ NP_{1,nom}\ NP_{2,acc}\ t_1\ v\ [_{VP}\ V\ t_2]]$ is therefore selected as a sympathy candidate, which is indicated by ❀. This sympathy candidate corresponds to the intermediate step in a derivational approach.

Now the sympathy (output/output faithfulness) constraint ❀MAXCASE compares the rest of the candidates with the sympathy candidate (O_{12}) rather than the input. The black index finger (☛), which points at the output O_1: $[_{vP}\ NP_1\ v\ [_{VP}\ V\ NP_2]]$, indicates a wrong winner; it would be a winner without the sympathy constraint. Since O_1 is blocked by the sympathy constraint, the output O_4: $[_{vP}\ NP_{1,nom}\ v\ [_{VP}\ V\ NP_{2,acc}]]$, in which the Japanese nominative and accusative case markers emerge in an English sentence, is consequently selected as most optimal.

As far as case is concerned, therefore, the constraint ranking for Japanese/English morphemic CS is as follows:

(19) Japanese/English CS (Case):
STAY >> SCR >> {CASE,❀MAXCASE} >> DEP

4.5 Split Sympathy Constraints

In the previous subsection, I illustrated how the idea of Sympathy Theory can be adapted to account for a mixed utterance in which both Japanese nominative and accusative case markers emerge. However, the sympathy constraint ❀MaxCase is too strong to spare such an utterance as (12a-b) above, in which only one Japanese case particle (nominative or accusative) emerges.

As a solution to this problem, this paper proposes that the sympathy constraint be split into the following:

(20) a. ❀MaxCase^{NOM}:
Morphological nominative Case of the sympathy candidate must be preserved.

b. ❀MaxCase^{ACC}:
Morphological accusative Case of the sympathy candidate must be preserved.

These split sympathy constraints help block the candidates that lack either morphological case. The tableau in Table 4 below shows how the Japanese nominative case emerges in the structure of SVO. As can be seen below, ❀MaxCase^{NOM} successfully prevents the candidates with no morphological nominative case (O_1 and O_3) from being selected. O_1 is again marked with the black index finger (☛), which indicates the wrong winner under a standard OT approach without the sympathy effect. Instead, the output O_2: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_2]]$ is selected as most optimal due to the fact that the output O_4: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_{2,acc}]]$ incurs more violations of the subsequent constraint Dep than O_2:

Table 4: Japanese/English CS (Japanese nom emerging in English)

	Input: V, NP_1, NP_2,...	Stay	Scr	Case	❀Max Case^{NOM}	Dep	❀Max Case^{ACC}
☛	O_1: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_2]]$		**		*!		*
☞	O_2: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_2]]$		**			*	*
	O_3: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_{2,acc}]]$		**		*!	*	
	O_4: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_{2,acc}]]$		**			*!*	
	O_5: $[_{vP}$ NP_2 NP_1 v $[_{VP}$ V $t_2]]$	*!	*	*	*		*
	O_6: $[_{vP}$ NP_2 $NP_{1,nom}$ v $[_{VP}$ V $t_2]]$	*!	*	*		*	*
	O_7: $[_{vP}$ $NP_{2,acc}$ NP_1 v $[_{VP}$ V $t_2]]$	*!	*		*	*	
	O_8: $[_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v $[_{VP}$ V $t_2]]$	*!	*			**	
	O_9: $[_{vP}$ NP_1 NP_2 t_1 v $[_{VP}$ V $t_2]]$	*!*		**	*		*
	O_{10}: $[_{vP}$ $NP_{1,nom}$ NP_2 t_1 v $[_{VP}$ V $t_2]]$	*!*		*		*	*
	O_{11}: $[_{vP}$ NP_1 $NP_{2,acc}$ t_1 v $[_{VP}$ V $t_2]]$	*!*		*	*	*	
❀	O_{12}: $[_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v $[_{VP}$ V $t_2]]$	*!*				**	

Similarly, the tableau in Table 5 below shows the structure in which only the Japanese accusative case marker appears. In this case, ❀MaxCase^{ACC} blocks the candidates without morphological accusative case, thereby selecting the output O_3: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_{2,acc}]]$ as most optimal:

Table 5: Japanese/English CS (Japanese ACC emerging in English)

	Input: V, NP_1, NP_2,...	Stay	Scr	Case	❀Max Case^{ACC}	Dep	❀Max Case^{NOM}
☛	O_1: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_2]]$		**		*!		*
	O_2: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_2]]$		**		*!	*	
☞	O_3: $[_{vP}$ NP_1 v $[_{VP}$ V $NP_{2,acc}]]$		**			*	*
	O_4: $[_{vP}$ $NP_{1,nom}$ v $[_{VP}$ V $NP_{2,acc}]]$		**			*!*	
	O_5: $[_{vP}$ NP_2 NP_1 v $[_{VP}$ V $t_2]]$	*!	*	*	*		*
	O_6: $[_{vP}$ NP_2 $NP_{1,nom}$ v $[_{VP}$ V $t_2]]$	*!	*	*	*	*	
	O_7: $[_{vP}$ $NP_{2,acc}$ NP_1 v $[_{VP}$ V $t_2]]$	*!	*			*	*
	O_8: $[_{vP}$ $NP_{2,acc}$ $NP_{1,nom}$ v $[_{VP}$ V $t_2]]$	*!	*			**	
	O_9: $[_{vP}$ NP_1 NP_2 t_1 v $[_{VP}$ V $t_2]]$	*!*		**	*		*
	O_{10}: $[_{vP}$ $NP_{1,nom}$ NP_2 t_1 v $[_{VP}$ V $t_2]]$	*!*		*	*	*	
	O_{11}: $[_{vP}$ NP_1 $NP_{2,acc}$ t_1 v $[_{VP}$ V $t_2]]$	*!*		*		*	*
❀	O_{12}: $[_{vP}$ $NP_{1,nom}$ $NP_{2,acc}$ t_1 v $[_{VP}$ V $t_2]]$	*!*				**	

In consequence, Japanese/English morphemic CS can be characterized by the following constraint ranking in terms of the case conflicts between abstract case and morphological case:

(21) Japanese/English CS (Case):
Stay >> Scr >> Case, ❀MaxCase$^{(NOM/ACC)}$ >> Dep >> ❀MaxCase$^{(NOM/ACC)}$

5 Conclusion

This paper advanced a theoretical model of CS based on Optimality Theory to solve the fundamental research problem in the grammatical aspect of CS: the inability to reduce the structural regularities of intrasentential CS to specific rules/constraints/principles, which may lead to the necessity of a third grammar. It must be noted that this paper, whether it proposes 'the union of two grammars' or 'split sympathy constraints', is not involved in the creation of a third grammar. As was discussed in the paper, a 'third grammar' is defined as a CS-specific mechanism, which cannot be applied to any other linguistic phenomenon.

Postulating such a third grammar should be avoided in the interests of theoretical parsimony. Instead, this study used more general, independently-motivated constraints that were originally proposed to account for monolingual phenomena and successfully explained the phenomenon of morphemic CS. In this sense, the constraints employed in this paper are not specific, universal CS constraints. Accordingly, this paper has a theoretical implication that intrasentential CS results from temporal, partial, but systematic re-ordering of constraint rankings to resolve conflicts in the two grammars involved.

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