Understanding S-Selection

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Abstract
I report a few study notes of semantic selection in this paper. First, if derivational affixes s-select roots, which have no categorial features, s-selection may be implemented independently of c-selection. Second, in certain constructions, it seems that s-selected features do not take part in the syntactic operations that establish syntactic dependencies, and thus the inspection of s-selection seems to be local to the merge domain. I also examine s-selection between phrases, showing that it follows the same projection principle as seen in the c-selection between phrases.

Keywords: s-selection, c-selection, derivational affix, root, movement, inter-phrasal selection

1. Introduction

Not all logically possible meanings of a nominal or verbal element are instantiated in the grammar of natural languages, and not all meanings that are instantiated in grammar interact with each other in the same way. The notion of semantic selection (s-selection) has been understood to capture the fact that "a word level category imposes a particular property on some head that it commands" (Sportiche 1995: Sec. 2.1), and this property is semantic, different from a syntactic one such as syntactic category (Chomsky 1965). For instance, the object of *drink* must be liquid, but the object of *pour* does not have to (Cowper 1992: 58). I use (1) to show the contrast.

(1) a. Bill drank the {juice/*shrimps}.
b. Bill poured the {juice/shrimps}.

The Chinese counterparts of *drink* and *pour* are *he* 'drink' and *dao* 'pour', respectively. They exhibit the same s-selection constraints. Pesetsky (1992: 4) states that "We would not expect a verb meaning 'eat' to select a proposition, nor would we expect a verb meaning 'believe' to select an interrogative complement in any language." In this perspective, s-selection seems to be quite consistent, even cross-linguistically. The consistency may show that the interactions of semantic features are similar cross-linguistically.

It is often emphasized that s-selection is independent of c-selection (e.g., Grimshaw 1979, 1981; Polard and Sag 1987: 121-129; Webelhuth 1992: 23; Odijk 1997). For instance, *ask* s-selects a question, but c-selects either DP or CP; by contrast, *wonder* s-selects a question and c-selects CP only, as shown by the acceptability contrast between (2a) and (2b).

(2) a. Mary asked {the time/what time it was}.
b. Mary wondered {*the time/what time it was}.

Also, in (1), both the verb *drank* and the verb *poured* c-select a DP, but their s-selections are different. Thus, from the perspective of c-selection, both *the juice* and *the shrimps* in (1a) are able to satisfy the c-selection of *drank* and thus the form *Bill drank the shrimps* is well-formed in the c-selection. It is the violation of the s-selection of the verb that causes the unacceptability of the sentence.

However, beyond the knowledge that s-selection is not the same as c-selection, our understanding of s-selection is still limited. I consider two issues in this paper.

First, what is the relation between s-selection and syntactic operations? Adger (2003: 89) surmises that "Merge does not inspect s-selectional properties". Similarly, when talking about s-selection, Landau (2007: 514) claims that "As a rule, selectional relations are inspected, satisfied, or violated at the interfaces, after all movement (at least, within a given phase) has taken place." Our question is how s-selection is different from pragmatic constraints, which are also inspected, satisfied, or violated after all syntactic operations have been accomplished. One crucial difference is that s-selection is defined by some specific syntactic configuration, such as the head-complement sisterhood relation (also see Sportiche's citation above), and thus the inspection is against this configuration, whereas pragmatic constraints are defined in discourse contexts, and thus the inspection takes the contexts as the criteria. Thus, for s-selection inspection, the same noun may be combined with one verb, but not another verb, and the contrast is not affected by the change of the discourse contexts. We have seen that the same noun *shrimps* may not follow *drank* in (1a), but may follow the verb *poured* in (1b). The semantic incompatibility between the verb *drink* and the nominal *shrimps* is independent of a discourse context. Accordingly, the acceptability contrast between (1a) and (1b) is independent of a discourse context. However, for pragmatic inspection, the same expression may be acceptable in one discourse context, but unacceptable in another discourse context, even though it contains the same verb-complement combination. For instance, the sentence *Bill drank the juice* is acceptable in the context of (3a), but not acceptable in the context of (3b). In (3b), the meaning of *beverage* covers the meaning of *juice*. Since the first sentence denies the existence of beverage in the dinner, the assertion made in the second sentence that Bill drank the juice causes a contradiction. The sentence is thus not acceptable in this context.

(3) a. There was no water served in the dinner. Therefore, Bill drank the juice.
b. There was no beverage served in the dinner. Therefore, #Bill drank the juice.

Thus, s-selection inspection is different from pragmatic inspection. This is a very preliminary understanding.

Second, although it is generally assumed that s-selection is an issue of the lexical meanings of verbs (Grimshaw 1979, 1981; Cowper 1992: 58; Pesetsky 1992: 4), there is no theoretical reason to restrict the study of co-occurrence restrictions to the word-level category, and the recent studies have started to explore word-internal s-selection (Lieber 2004, 2006), and inter-phrasal c-selection (e.g., Bruening 2010); against this background, we wonder how s-selection in these different domains looks like.[1]

In order to get a better understanding of the very notion of s-selection, we need to see what empirical issues it covers. I can identify three uses of s-selection. In the first use, s-selection means selection of theta roles (e.g., Chomsky 1965). In the current syntactic theories, theta-roles are represented as the arguments of projections in the lowest domain of a clause structure (the first-phase in Ramchand 2008a). The presence of a certain theta role indicates the presence of a certain projection, cross-linguistically. For instance, the presence of AGENT indicates the projection of VoiceP (Pylkkänen 1999; Alexiadou and Schäfer. 2006), or EP (Event Phrase, Borer 2005: 85), or InitiationP (Ramchand 2008a).[2] Major semantic

[1] In a constructivist view (e.g., Borer 2005), the acceptability contrast between (1a) and (1b) does not come from the lexical meanings of the nouns and verbs. It is not clear how the contrast is accounted for, and the status of s-selection in general, in the view (see Ramchand 2008b: 116 for critical comments on the radical constructism, from the perspective of selection).

[2] One reviewer asked whether the two statements, the statement that in the first use of s-selection, it means selection of theta roles and the statement that the presence of theta role indicates the presence of a certain projection, "are universal and whether they apply to languages like Chinese. If yes, which types of projection fit

categories such as proposition, entity, and property (Pesetsky 1992: 2; Adger 2003: 88) may also be linked to the syntactic projections that host situation-participants. The presence of an argument of such semantic categories specifies the situation type of the predication. I thus call s-selection in this use situation-participant selection. It is a syntacticized s-selection, in the perspective of the current generative grammar.

In the second use of s-selection, different semantic properties may correlate with different functional elements, and are thus represented by different functional projections (e.g., Cinque 1999; Rizzi 1997). For instance, as seen in (4) through (6), the verb *know* can take either a declarative or an interrogative complement, *believe* takes a declarative complement, and *ask* or *wonder* only takes an interrogative complement.

(4) a. Bill knows that Kim came to the party.
b. Bill knows who came to the party.
(5) a. Bill believes that Kim came to the party.
b. *Bill believes who came to the party.
(6) a. *Bill {asked me/wonders} that Kim came to the party.
b. Bill {asked me/wonders} who came to the party.

The contrast, which has been claimed to exhibit typical s-selection in Grimshaw (1979), has been represented by the rich functional projections in the C-domain, and certain syntactic operations such as wh-movement and head movement are triggered by some specific features in the C-domain. Different clause types, together with various syntactic features, belong to "categorizable units of language" in Wiltschko (2014: 1). They may be covered by the selection of functional categories. This should also be treated as a kind of c-selection. Also, interrogative and exclamative properties may have both a nominal version and a clausal version, as seen in (2a) above. Presumably, the correlated nominal version (e.g., *the time* in (2a)) also shows syntactic properties distinctive from those of other semantic types of nominals, such as entity-denoting nominals (type e; e.g., *Ma Yo-Yo* in *Ma Youyou shi yinyejia* 'Ma Yo-Yo is a musician'), or property-denoting nominals (type <e,t>; e.g., *yinyuejia* 'a musician' in the example just mentioned). I thus call s-selection in this use selection of functional categories. The relevant semantic properties are also syntacticized.

Third, in addition to the above two uses of s-selection, there are other instances of s-selection, for instance, the direct object of *pay* must be an amount of money (Jackendoff 1987: 384), and the contrast between liquid and non-liquid denoting expressions for certain verbs, as seen in (1). The s-selected features are neither associated with theta roles nor represented by any independent functional projections. In contrast to the situation-participant selection and the functional category selection, this last type covers semantic properties that have not been found to be syntacticized. They simply show the semantic restrictions on the combination of one element with another element. I call this last type non-syntacticized s-selection. The goal of this paper is to try to get a better understanding of this authentic type of s-selection. I will not discuss the two types of syntacticized s-selection any more in this paper.

Zhang (2012) extensively investigates the issue whether the contrast of a pair of conflicting semantic features, such as [+liquid] and [-liquid], has any impact on the syntactic structure. She finds that there is no syntactic contrast between (7a) and (7b), although in the former, *drank* s-selects [+liquid], and in the latter, *broke* s-selects [-liquid].

Chinese? Does Chinese language share the same correlation?" I assume that in this respect, Chinese is not different from other languages. Specifically, for instance, Chinese also has a functional projection to host the initiator of an event, an agent, as seen in Huang (1993). Of course, I am ready to improve our knowledge if there is evidence to show that Chinese is different from other languages in this respect.

(7) a. Bill drank a bottle of wine.
b. Bill broke a bottle of wine.

Zhang first shows that the structural relation between the verb and the object is the same in the two sentences. In the same object *a bottle of wine*, [-liquid] is the semantic feature of the word *bottle*, and [+liquid] is the semantic feature of the word *wine*. Since there is only one syntactic head for each expression at any level of structure-building, for the same DP, it is impossible for both *wine* and *bottle* to be the syntactic heads at any given level. Zhang (2012) concludes that the two semantic features can be projected from either the syntactic head or the non-head element, and thus an instance of syntax-semantics mismatch is attested in this projection issue. Specifically, the semantic feature [+liquid] is projected from *wine* in (7a), but the semantic feature [-liquid] is projected from *bottle* in (7b). She concludes that only semantic features have this freedom. When the semantic feature and the categorial feature are both projected from the same sister, the semantic feature projection matches with the syntactic feature projection; however, if the semantic feature is projected from one sister and the syntactic features is projected from the other sister, a mismatch is seen (See Zhang 2012 for details).

In this paper, I report a few study notes of s-selection. They are not related to each other. But as far as I know, they have not been discussed in the literature. Since we do not know much about s-selection, bringing our attention to the relevant empirical issues is important to our knowledge of s-selection, and eventually to our understanding of the syntax-semantics interfaces. I discuss a case of s-selection that is independent of c-selection (Section 2), certain constructions in which syntactic dependencies may have apparent conflicting semantic features (Section 3), and a few cases in which the s-selectors are phrases (Section 4), and then show a projection similarity in c-selection and s-selection (Section 5).

2. S-selection without c-selection

In word formation, roots have no categorial features (Halle and Marantz 1993; Harley 1995, 2005; Harley and Noyer 1999; Marantz 1997; Borer 2005; DiSciullo 2005; Lieber 2004, 2006; de Belder 2011). However, derivational affixes s-select roots (Lieber 2004, 2006). For instance, the English suffix *–ify* s-selects either [-dynamic, scalar] roots, as seen in (8a), or [material] roots, as seen in (8b) (Lieber 2006: 267):

(8) a. rigidify; solidify; purify
b. personify; signify; mummify

In Mandarin Chinese, the suffix *–ran* s-selects state-denoting roots, as seen in (9a), and thus rejects event-denoting roots, as seen in (9b) (Note that as a derivational affix, its combination with another element is not productive; therefore, some combinations, such as **bing-ran* ‘sick-ran’, are not acceptable).

(9)	a.	mang-ran;	tu-ran;	xin-ran;	bi-ran
		confused-RAN	sudden-RAN	happy-RAN	necessary-RAN
		‘confused’	‘sudden’	‘happy’	‘inevitable’
	b.	*tiao-ran;	*xi-ran;	*xiao-ran	*lai-ran
		jump-RAN	wash-RAN	laugh-RAN	come-RAN

Importantly, many of the roots that *-ran* selects are bound roots. Bound roots are not words and thus may not be used independently. For instance, the bound root *xin-* in *xin-ran*

'happy' may not modify a noun, occur as a predicate or argument, as shown in (10a), (10b), and (10c), respectively.

(10) a. *xin (de) laoshi
happy DE teacher
b. *Ma Yo-Yo hen xin.
Ma Yo-Yo very happy
c. *Ma Yo-Yo xiangshou xin.
Ma Yo-Yo enjoy happy

The syntactic category of a form is decided by its contribution. Since the bound form *xin-* may not occur in the same position as a word such as a noun, adjective, or verb, there is no way to decide its category. Following the literature cited above, assume roots, including bound roots, have no categorial features. The fact that linguistic elements may s-select acategorial elements indicates that s-selection can be independent of c-selection. This is our first study note of s-selection.

3. Conflicting semantic features in syntactic dependencies

If two syntactic positions have a syntactic dependency relation, which is established by either movement or non-movement linking (e.g., an antecedent-proform relation), they may be associated with elements that have conflict semantic features. I introduce three different constructions to show this fact.

3.1 Relative clause constructions

The first case is that the element that is supposed to occur in a relative clause-internal gap and the related relative clause-external nominal may have contrastive semantic features. In a canonical relative clause construction, such as (11), the semantic features of the element related to the gap in the relative clause should be identical to that of the modified noun. In (11), for instance, both the object of the second *drink*, which is related to the gap position of the relative clause, and the word *tea*, which is the object of the first *drink*, are [+liquid].

(11) I would like to drink the tea that [you drink _].

In (12a), however, the object of *grew* in the relative clause must be [-liquid], however, the noun *tea*, which is modified by the relative clause, is the object of *drink*, and thus it must be [+liquid]. The Chinese example in (12b) shows the same point.

(12) a. I would like to drink the tea that [you grew _].
b. Wo he-guo [[Ali-shan-shang zhong _] de cha].
1SG drink-EXP Ali-mount-on plant DE tea
'I drank the tea that grew on the Ali Mount.'

The dependency between a gap in a relative clause and the modified noun is well-recognized, regardless of whether the dependency is established by the movement of the noun from the gap position (Vergnaud 1974; Kayne 1994; Bianchi 2000, among others), or by the movement of a null operator from the gap (Chomsky 1977; Browning 1987). In the nominal movement analysis, the dependency between the relative clause gap position and the noun is direct. The lower link of the movement chain is [-liquid], and the upper link of the chain is [+liquid]. In the operator movement analysis, the operator comes from the gap, and thus is [-liquid]; but as a bound variable, it is bound by the modified noun (Demirdache 1991), and

thus should have the same interpretation as the noun, which is [+liquid]. In either analysis, the two links of a relative clause dependency have conflict semantic features.

3.2 Argument-sharing in complex-predicate constructions

In a complex predicate construction, one argument can be shared by two predicates. In (13a) (Tang 1990), for instance, the internal argument of the matrix verb *zhu* 'cook' is *tang* 'soup', which is shared with the internal argument of the embedded verb *he* 'drink'. Such a construction is called object-sharing series verb construction. In Collins's (1997: 491) analysis of the construction, for instance, the internal argument of the embedded verb is a *pro*, taking the internal argument of the matrix verb as its antecedent.

(13) a. Women zhu tang he.
1PL cook soup drink
'We cook soup to drink.'

b. Naxie ren jian ye-cai chi.
those person pick wild-vegetable eat
'Those people pick up wild plants to eat.'

In (13a), both *zhu* 'cook' and *he* 'drink' may take a liquid-denoting nominal as the object. Since *tang* 'soup' is [+liquid], there is no conflict between the *pro* and its antecedent, with respect to the semantic property [+liquid]. In (13b), both *jian* 'pick' and *chi* 'eat' take a non-liquid-denoting nominal as the object. Since *ye-cai* 'wild plant' is [-liquid], there is no conflict between the *pro* and its antecedent, with respect to the semantic property [-liquid]. In the following (14), however, the assumed *pro* is the object of *he* 'drink', and thus must be [+liquid], but its antecedent, *yezi* 'coconut', is the object of *zhong* 'plant', and thus must be [-liquid]. We thus see that the two links of the pro-dependency have conflict semantic features (I thank an anonymous reviewer for giving me examples (14) and (16)).[3]

(14) a. Dao-shang de ren dou zhong yezi he _.
island-on DE person all plant coconut drink
'People on the island all plant coconuts for drinking.'

b. Dao-shang de ren kan yezi he _.
island-on DE person cut coconut drink
'People on the island cut coconuts to drink.'

3.3 ATB constructions

In an Across-The-Board (ATB) coordinate construction, each of the two conjuncts has a gap, and the two gaps are both associated with an overt expression that is external to the coordinate complex. In (15), for instance, both the object gap of the verb *jie* 'borrow' and the object gap of the verb *mai* 'buy' are associated with the left-peripheral topic nominal *shu* 'book'.

[3] One reviewer mentioned that compared with (14a), the following sentence is not acceptable. Indeed, not all verbs may occur in such a construction. It is the existence of the acceptable forms that challenges our current understanding of s-selection, and thus I consider the acceptable forms in my discussion. I thank the reviewer for bringing our attention to (i) but leave an account for such a form for another research.

(i) *Dao-shang de ren da yezi he _.
island-on DE person hit coconut drink
Intended: 'People on the island hit coconuts for drinking.'

(15) Shu, wo zhi jie _ danshi bu mai _.
book 1SG only borrow but not buy
'As for books, I only borrow, but never buy them.'

In Williams (1977, 1978), ATB constructions are derived by a special mode of movement that is launched from the two gap positions. Thus, in (15), *shu* is moved from both the object position of *jie* and the object position of *mai*. In Munn (1992), the left-edge overt nominal is moved from the first conjunct only, and the moved element is the antecedent of a *pro*, which is associated with the gap of the second conjunct. In Hornstein & Nunes (2002), the left-edge overt nominal is moved first from the second conjunct, and then undergoes a sideward movement, landing in the first conjunct, and finally it moves to the surface position from the first conjunct.

In (15), both *jie* and *mai* may take a non-liquid-denoting nominal as the object, *shu* 'book' is [-liquid], and thus there is no conflict between the links of syntactic dependencies, with respect to the semantic property [-liquid]. In (16), however, the element associated with the first gap is the object of *zhong* 'plant' and thus must be [-liquid], but the element associated with the second gap is the object of *he* 'drink' and thus must be [+liquid]. The two gaps have conflict semantic features. Therefore, the syntactic dependencies established by them and the left-edge overt nominal do not have the same semantic properties.

(16) Cha, wo zhi zhong _ danshi bu he _.
tea I only plan but not drink
'Tea, I only plant but never drink.'

If the left-edge nominal is specified as denoting either a liquid or non-liquid, as shown in (17a) and (17b), no ATB construction parallel to that of (16) is acceptable.

(17) a. *Cha-shui, wo zhi zhong _ danshi bu he _.
tea-water 1SG only plant but not drink
b. *Cha-shu, wo zhi zhong _ danshi bu he _.
tea-tree I only plant but not drink

Thus, (16) is possible because the word *cha* 'tea' itself is underspecified with a liquid and non-liquid reading out of a context. This is also true in the relative clause constructions in (12) and the object-sharing construction in (14). In each of the three constructions, there are two verbs which have conflict restrictions on the semantic properties of their objects, and thus no underspecification of the relevant properties is allowed locally. However, a certain syntactic dependency is still established between the two objects, which have conflict (i.e., not underspecified) semantic properties.

3.4 Discussion: the domain and time of s-selection inspection

We have seen that there are syntactic dependences that show no semantic property consistency. An s-selected property is not syntacticized, and thus the fundamental Projection Principle and the Inclusiveness condition do not apply to it. The Projection Principle says that the information encoded in the lexicon cannot be ignored or lost during the course of a syntactic derivation (Chomsky 1981: 36). Similarly, the Inclusiveness condition states that during a syntactic operation, no feature may be altered (Chomsky 1995: 225, 228). A similar idea is expressed in the No-Tampering condition (Chomsky 2005: 11). One might assume that an s-selected property is free to be altered in a syntactic dependency. However, if a semantic property were free to be altered in a syntactic dependency, ungrammatical sentences

would be generated. For instance, the word *bank* encodes either a financial institute (money bank) or the land alongside a river (river bank). (18) means either you and I went to the same money bank or you and I went to the same river bank. But it does not mean that between you and me, one went to a money bank and the other went to a river bank, a mixed reading. Assuming the null operator theory of relative clause constructions, if the null operator that is selected in the relative clause means one thing, and it means another when it lands at the CP-domain of the relative clause and its new meaning is co-indexed with the word *bank* in the matrix clause, the unavailable mixed reading is generated.

(18) I went to the bank that you went to.

In all of the three cases discussed in 3.1 through 3.3, the relevant noun is underspecified with the [liquid] feature in the absence of a context, and gets the feature specified when it satisfies the s-selection of the verb. Homophones do not have underspecified semantic features; instead, their semantic features are specified, and they share phonological forms accidentally. The unavailability of the mixed reading of (18) indicates that elements with different semantic readings do not form a syntactic dependency. The apparent semantic inconsistency in the three constructions discussed in 3.1 through 3.3 indicates that although the relevant semantic properties satisfy the s-selection in the merge domain locally, they do not take part in the syntactic operation for a syntactic dependency that is beyond the merge domain.

If an s-selected feature does not take part in a syntactic operation beyond the merge between a selector and the selected element, the three constructions discussed indicate that if the object of the verb has an underspecified semantic feature, it may satisfy the s-selection of the selecting verb, and may remain underspecified with the feature if it is not in the sisterhood relation with that verb any more, and therefore, it may satisfy a different s-selection of another verb in a new context. In other words, domain-wise, s-selection is implemented in the selector-selectee relation locally.

Time-wise, this locality indicates that s-selection is inspected early, rather than late. This leads to an answer to the inspection-timing question mentioned in the introduction. Specifically, s-selection relation is defined in a configuration established in syntax, and the inspection is implemented in that configuration only. Thus, on the one hand, after an successful inspection, an element with an underspecified semantic feature may satisfy the s-selection of a different selector in another syntactic environment, as seen in the three constructions discussed above. On the other hand, when a merge is illegal with respect to s-selection, no more syntactic derivation may rescue the defective form. Therefore, if a construction is defective in its s-selection, such as **Bill drank the shrimps*, it is always rejected, and no discourse context may rescue it. This is different from a pragmatics-oriented acceptability judgment, which can vary with the discourse context. As I shown early, the s-selection in *Bill drank the juice* is fine, but the sentence is acceptable in (3a), but not in (3b). Thus, pragmatic acceptability inspection can be later than s-selection inspection. The former can be implemented after a syntactically well-built sentence is situated in a discourse context.

The discussion of this section leads to the conclusion that it is possible that a selected feature does not take part in the syntactic operation that establishes a syntactic dependency, and the inspection of s-selection is different from pragmatic inspection in the domain and accordingly in the timing.

4. Inter-phrasal s-selection

Although the selector of a selection relation is defined as a word-level category in the literature (see the citation in the first paragraph of this paper), there is no theoretical reason to

limit our research of co-occurrence restrictions on the word-level category only. Following Koopman and Szabolcsi (2000), "We are not assuming that the material that counts as a word for the purpose of phonology is dominated by any particular kind of syntactic label" (p. 223 fn. 8) and "Words do not correspond to syntactic atoms or heads" (p. 39). I have already discussed word-internal s-selection in Section 2, I now turn to inter-phrasal s-selection.

Assuming that modifiers are phrases, I think Bruening's (2010: 533-534) c-selection by modifiers is c-selection between phrases:

> I assume that there is a selectional relationship between modifiers and what they modify, such that the modifier selects the category it modifies. It is clear that adjectives only occur with elements of category N, while adverbs only occur with elements of category V; I view this as an instance of categorial selection.

Modifiers may not occur independently of the modified element. Similarly, a head element may not occur without its selected element. The dependency relation between a modifier and the modified element can be somehow parallel to that between a head element and its selected element. If this dependency relation is a selection relation, a selection relation can be established not only between a head and a phrase, but also between two phrases. Moreover, the dependency can be not only categorial, as claimed by Bruening, but also semantic.

In this new perspective, some semantic co-occurrence restrictions between phrases can be treated as instances of inter-phrasal s-selection, in addition to those of c-selection proposed by Bruening. For instance, a *for*-PP, such as *for Lisa* in (19), s-selects an expression that encodes a volitional action (Hole 2014: Sec. 2.2).

(19) Eddie made a cake for Lisa.

Moreover, manner adverbial phrases, such as *intentionally*, must occur with an agentive expression, which contains an agent (Zubizarreta 1987), and thus they s-selects agentive expressions.

(20) a. John killed Bill [deliberately and intentionally].
b. Bill was killed [deliberately and intentionally] by John.

Furthermore, it is well-recognized that an *in*-temporal PP must occur with a verbal phrase that expresses a telic (bounded) event, and a *for*-temporal PP must occur with a verbal phrase that expresses an atelic (unbounded) event, as seen in (21) (Venderler 1967; Krifka 1992: 42). One can thus assume that the former PP s-selects a telic event and the latter PP s-selects an atelic event.

(21) a. They built the dam {*for a year/in a year}.
b. They built dames {for a year/*in a year}.

Also, some adverbial phrases, such as *one by one*, must occur with an expression that denotes an event that has a plural participant. In (22a), the agent *the committee* is a plural participant; in (22b), the agent *the team* is also a plural participant; and in (22c), the theme *the apples* is a plural participant. The s-selection of the phrase *one by one* is satisfied in all of the three sentences. In (22d), however, there is no plural participant. Both the agent *John* and the theme *the apple* are singular participants. No element is able to satisfy the s-selection of the adverbial phrase *one by one*, therefore, the sentence is not acceptable.

(22) a. The committee voted one by one. (Henderson 2014: 7)
b. The team walked onto the field one by one. (Henderson 2014: 7)
c. John ate the apples one by one.
d. *John ate the apple one by one.

One more example of intra-phrasal s-selection is that a shape or size AP s-selects a non-mass NP (Zhang 2013), and thus (23a) is acceptable, but (23b) is not.

(23) a. big computers
b. *big oil

5. The issue of categorial projection in s-selection

Selection is about the restrictions on the input of a merge operation. In contrast, projection is about the output of a merge operation. After reporting a couple of our study notes of s-selection, in this section, I extend my discussion to the projection issues that are related to our new understanding of s-selection.

In derivational morphology, when a root is s-selected by an affix, since it has no categorial features, it does not project any categorial feature to the output word. In *purify*, for instance, the [-dynamic, scalar] expression *pure* is s-selected by the suffix *–ify*, and it does not make any contribution to the verb category of *purify*. Obviously, if *pure* is used as a word, it has a different distribution from *purify*: the former may not have a complement (e.g., **pure the water*), whereas the latter must have a complement (e.g., *purify the water*). Similarly, the Mandarin Chinese suffix *–zhe* s-selects a [+dynamic] root, as in *ji-zhe* 'journalist', *xue-zhe* 'scholar', and *du-zhe* 'reader'. The roots *ji* 'take notes', *xue* 'learn', and *du* 'read' do not project any categorial feature to the respective derived nouns. When such roots are used independently, they function as verbs, instead of nouns. Thus, consistently, below the word-level, s-selected element projects no categorial features.

As for the issue whether a derivational affix projects categorial features, there seems to be no generally accepted conclusion yet. While Borer (2005) gives a positive answer, DiSciullo (2005), Lieber (2004, 2006), and especially de Belder (2011) give a negative answer. In the latter approach, it is a functional head, rather than a derivational affix, that decides the category of the output of word-formation. Making a choice between the two approaches is beyond the scope of this paper.

Now I turn to the issue if the selector is a phrase, whether its categorial features project. Bruening (2010: 534) states:

> I also assume that when an adjective or adverb merges with a nominal or verbal projection, it is the nominal or verbal one that projects, not the adjective or adverb. Therefore, I do not adopt Chomsky's (2000) principle that says that selection determines projection. Rather, when an argument merges with its selector, the selector projects; but when a modifier merges with a category that it selects, that category projects. I therefore divide syntactic categories as selectors into two classes:
> (32) Selectors
> a. Modifiers: A(P), Adv(P)
> b. Argument takers: C, T, Asp, Appl, V, P, N, . . .
> (33) Principles of Projection
> a. If X selects and merges with Y and X is an argument taker, X projects.
> b. If X selects and merges with Y and X is a modifier, Y projects.

Traditionally, when a head element c- or s-selects another element, the former, rather than the latter, projects. This is well-recognized, as stated in Bruening's (32b) and (33a) above. If a selector is a phrase, it is the selected element that projects. In (24), for instance, the AP *big* c-selects the NP *apple*, and the syntactic category of the whole expression *big apple* is an NP, identical to that of the selectee *apple*.

(24) a big apple

The same projection principle applies to inter-phrasal s-selection. According to McNally (To appear: (4)), a modifier is "an expression that combines with an unsaturated expression to form another unsaturated expression of the same type". In (19), the PP *for Lisa* s-selects the VP *make a cake*, and the semantic type of the whole expression *make a cake for Lisa* is similar to that of the selected phrase *make a cake*, i.e., <e,t>. Thus, one similarity between the inter-phrasal s-selection and the inter-phrasal c-selection discussed in Bruening's (33b) is that it is the selected phrase that projects (cf. Chomsky 2013).

In this section, I have described the different projection patterns in the new perspective in which a phrase, as well as a word, can be a selector. Although the content of this section does not introduce any empirical finding, it has made a connection between the traditional theory and the new understanding of both c-selection and s-selection.

6. Summary

In this paper, I have tentatively explored, first, how s-selection interacts with syntactic operations. I have shown that, on the one hand, if derivational affixes s-select roots, which have no categorial features, s-selection can be implemented without c-selection. On the other hand, s-selected features do not have to take part in the syntactic operations that establish syntactic dependencies, and thus the inspection of s-selection seems to be local to the merge domain. Second, I have made an effort to study the s-selection between phrases, and found that it follows the same projection principle as seen in the c-selection between phrases.

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對語意選擇關係的理解

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摘要
詞語間的語意選擇有可能獨立於詞類選擇.如果詞根沒有詞類,那麼派生詞綴對詞根的語意選擇就獨立於詞類選擇.其次,在某些句式中,兩個成分之間的句法依賴關係也有可能獨立於語意特徵的選擇.因此,對語意選擇的檢驗可以是局部的.本文亦討論兩個短語之間的語意選擇關係.發現短語之間的語意選擇關係跟短語之間的詞類選擇關係遵守同樣的投射原則.

關鍵詞
語意選擇, 詞類選擇, 派生詞綴, 詞根, 移位, 短語之間的語意選擇關係