

Preposition Stranding: A Cognitive Account of Multiple Foci

Takao Kanasugi
Taisei Gakuin University
kanasugi@tgu.ac.jp

1. Introduction

Language structures are motivated in scenes essential to human experience. Since cognitive science is a research to explore mind and brain of human beings, linguistics is necessarily involved in a part of the enterprise of cognitive science. In recent years, the knowledge and actual proof data of a variety of fields are introduced into linguistics. In cognitive linguistics, for example, the researches involve psychological or neurophysiological findings to elucidate a relationship between language structures and human experience: an embodiment of the external world serves to uncover the psychological mechanism behind a linguistic phenomenon. The models or strategies utilized involve iconic principles, reference point/dominion organizations, figure/ground alignment, focal attention, grammaticalization, schematization and categorization. They are significantly motivated by the embodiment of the external world especially by spatial cognition of basic abilities (cf. Haiman 1985, Lakoff 1987, Langacker 1999). In a cognitive analysis of coordinate structures, for example, linear iconicity or an organization based on visual perception should be working principles. A natural sequence required for the structure is necessarily tied to the notion of "good continuation" in the terminology of Gestalt psychology. It is pointed out that the notion is prevalent in a variety of the linguistic structures. This kind of the linguistic function is termed "linguistic organization" in the cognitive grammar analysis (cf. Kanasugi 2002).

The present account oriented by cognitive abilities is concerned with a phenomenon which has attracted linguists' interests especially in the generative paradigm. The phenomenon is referred to as "preposition stranding".¹ "Preposition stranding" involves a construction of *wh*-interrogatives with sentence-final prepositions.² The term is commonly used in a linguistic analysis, but the present account terms the phenomenon WSFP constructions. The following four points are to be discussed: (i) a potential for categorization of WSFP with a consideration of the historical background of prepositions, (ii) how *wh*-interrogatives with sentence-final compound prepositions (henceforth WSFCP) are assimilated into the category as an extension by virtue of instantiations, (iii) the focus operation in a construct of WSFP with particular reference to construction grammar perspective, reference point/dominion organizations (cf. Lakoff 1987, Goldberg 1995, Langacker 1999) and (iv) how the deverbal prepositions (*pending, during, considering, concerning, etc.*) are interrelated with WSFP, taken into a consideration of the relationship between WSFP and the historical development of deverbal prepositions.

¹ The term "preposition stranding" has been invented by John Robert Ross and is widely used in a variety of linguistic literatures still now.

² Preposition stranding is indeed not possible at least in Romance language such as French, Italian. So the fact doesn't seem to reflect universal grammar.

2. The Establishment of WSFP

A phenomenon of WSFP has received considerable attention from scholars and experts, and is provided with a variety of the analyses in the literatures on linguistics.³ Especially, WSFP constructions have been presented with a lot of approaches mainly within the generative paradigm. Instances of WSFP are the following:

- (1) Who did Mary send an e-mail to ?
- (2) Which region does a satellite land on ?
- (3) What does George read a statement about ?
- (4) What company did a manager sign a contract with ?
- (5) Which room did a general officer revise a new plan in ?
- (6) Which Greek authors does he have books by ? Ross (1986:123)

The approaches to WSFP in the generative paradigm highlights a rule-governed stance where grammaticality explanations depend on whether or not a preposition can be placed at a sentence-final after the operation of "movement": the researches are based on a parametric strategy of dichotomy.⁴ Therefore, WSFP which can not be analyzed in the paradigm turns out to be exceptional or peripheral (cf. Chomsky 1977, Pesetsky 2000, Lightfoot (ed.) 2002). But the present account does not employ a rule-governed strategy in order to avoid the theory-laden notion of "movement" and its theoretical implications (cf. Gries 1999, 2001, Kanasugi 1995). Instead, the approach employed is deeply motivated by experience-based knowledge, and involves a construction grammar perspective: WSFP need not be divided into central or peripheral under both cognitive and pragmatic considerations of WSFP.⁵

2.1 Focus Structures in WSFP

Among basic abilities of human beings, schematization and categorization are of great importance. In linguistic realizations, the abilities represent that the instance of a lexical or grammatical word is categorized as its member via a generally construction schema. In general, given that a new instance exists, which shares a similarity with a prototypical one, it is to be categorized as an extension via the abstraction of the similarity between the two instances. This process elucidates the existence of linguistic categorization on construction levels, not on lexical levels. In addition, there is another process where a general construction schema is produced via the abstraction of the similarity among the multiple instances. This cognitive process reflects another level of linguistic categorization.

A construction as well as a lexical or a grammatical word is regarded as an another

³ In terms of language processing, the notion of "semantic interpretability" can be strategical entries to the explanation of a phenomenon of WSFP. However, this notion is somewhat vague and is difficult to be defined. Instead, more elaborately strategical point of view is introduced in the present account.

⁴ Since most interrogative pronouns in English (the exception is *how*) start with *wh*, the process by which interrogative phrases are fronted is referred to as "*wh*-movement" in the generative paradigm.

⁵ Although Deane (1992) and Takami (1992) except purely syntactic theorists employ cognitive or pragmatic approaches to the phenomena, the notion of '*wh*-phrase extraction' or '*wh*-movement' still appears in the literatures.

level of the categories. It is therefore argued that WSFP constructions have undergone the processes of schematization and categorization as well. Goldberg (1995:72) states that speakers search for a certain similarity-relation in order to "make sense of" the input forms, fitting the new forms into the dynamic network of interrelated constructions that constitute their linguistic knowledge. That is, new patterns of constructions are automatically assimilated to pre-existing patterns as much as possible: old patterns of constructions motivate new patterns of constructions if new patterns inherit from old patterns. Put differently, a new construction is to be accepted in a community after the successful "entrenchment".

2.1.1 Historical Background of Prepositions

From a historical perspective of English language, it was in the Middle English period (about AD1150-1500) that a great change occurred with respect to grammar and vocabulary. Especially, on the field of vocabulary, the Middle English lost a majority of inflection inherited from the Old English period and in turn acquired a great amount of loan words from French (cf. Mitchell 1985, Visser 2002). When the history of prepositions is observed in terms of social linguistics, the loan words in French origin attract considerable interests with particular reference to WSFP constructions. Indeed, a lot of deverbial prepositions have originated in Old French.⁶ Among the historical changes of the language, the Middle English period is characterized by a great reduction in the inflectional system inherited from Old English. As the inflectional system decayed, a grammatical device was increasingly utilized to replace it. The device was the increased use of grammatical words to carry out the functions done by inflections formerly in the Old English period. Thus, English has shifted from an inflectional to an analytic language. As a result, a word order has become more rigid in the end of the Middle English period.

Turning to prepositions, a preposition has its life history. As an aspect of morphological changes, a function of some Modern English prepositions used to be performed by a morpheme. In the history of prepositions, some ones, i.e. *of*, *by*, and *in* used to be indicated by inflections. They have been derived from the inflections *-e*, *-es*, *-um*, respectively. It is argued that a certain amount of prepositions in present-day English have been derived via such a process of "degrammaticalization", or "lexicalization". Other prepositions such as *over*, *up*, *under*, *before*, *after* have been derived from adverbs. The prepositions like these are referred to as a prepositional adverb. A preposition of this kind also retains characteristic of adverbs and has undergone grammaticalization from adverbs to prepositions involved. The characteristic found in prepositional adverbs is clearly grounded in "layering".⁷

⁶ Special attention to deverbial prepositions of WSFP constructions is to be paid later in section 3.

⁷ The characteristic of prepositional adverbs reflects on linguistic realizations.

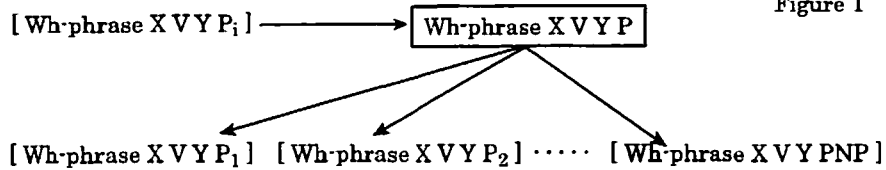
(i) Paul flew over U.S.A.

(ii) Fleetwood went over to Australia.

The prepositional adverb *over* does not necessarily require the object as is evident in (ii).

2.1.2 Categorization of WSFP

With the observation of the historical development of prepositions, it is predicted that by the end of the Middle English period, WSFP constructions could be completely established:



Similarities among multiple instances are motivated to produce a general schema. Another basic ability by which a general schema instantiates a specific instance is also a crucial factor to linguistic categorization. It can be argued from the historical viewpoint of WSFP constructions that they have constituted a dynamic network since the establishment. Figure 1 represents a dynamic network. Both the process of the instantiation of a specific instance by checking it with a general schema and extensions from the prototypical instance are reflected there. Given that [Wh·phrase X V Y P₁] represents multiple instances of WSFP, Wh·phrase X V Y P is to be produced as a general schema by the generalization of multiple instances of [Wh·phrase X V Y P₁]. Multiple instances of WSFP are entrenched in a community and thereafter obtain the status of a conventional unit of the constructions. The variant of [Wh·phrase X V Y P₁], for example, is the instantiation from a general schema, Wh·phrase X V Y P.

Next case to be considered is the reflection of motivation in terms of the syntactic form of prepositions. A number of interrelated instances are represented in Figure 1. The relationship between WSFP and WSFCP attracts more interests in the diagram. PNP indicates a compound preposition. Compound prepositions involve *in front of*, *on top of* and *by way of*, etc.. The following are the typical instances which are categorized as a WSFCP member:

- (7) Who did Mary play the violin in front of ?
- (8) Who did George set up a program in place of ?
- (9) Which country did Bill visit France by way of ?
- (10) Which shelf did John find a room key on top of ?
- (11) What solution did a firm develop a plan in search for ?
- (12) Who did a musical group make a session in company with ?
- (13) What welfare work did a prime minister comment with regard to ?

Because compound prepositions are originally a combination of three constituents with prepositions and nouns, it is naturally predicted that WSFCP has established after WSFP does (cf. Schwenter and Traugott 1995). After the completion of the decay of the inflectional system in the late Middle English period, WSFCP would be established. In terms of the present account, it is restated that WSFCP is an instantiation from a general schema of WSFP and the latter construction is independent of the former. There

is an idea that WSFCP is therefore a non-central extension from the prototypical WSFP instance by means of the acceptance of partial similarities of the syntactic properties: WSFCP has relations of syntactic motivation with WSFP. Both constructions are clearly related syntactically. In Wh-phrase X V Y P, the final position is occupied with simple prepositions. But basic abilities of inference make it possible to place compound prepositions on the final position in Wh-phrase X V Y P. But a compound preposition needs to be recognized as a licensed unit of prepositions before the establishment. A native speaker of English today makes a reanalysis of compound prepositions as a conventional unit of simple prepositions.

The process is concerned with schematization and categorization as in the cases of lexical and grammatical words. As is already mentioned, in an environment where semantically or syntactically similar constructions are used, another possibility is that whether or not a new construction receives acceptable judgements depends on the interrelation of a new and an old construction. For example, where a compound preposition of *in front of* is assimilated into a category, it is not true that the construction of **with way of* or **at search for* can undergo the categorization process for the status of the category member. The working factors for this phenomenon may involve a blocking effect concerning word formations. Pre-existence instance *by way of* or *in search for* blocks to categorize **with way of* or **at search of* as a category member of compound prepositions. Apparently, constructions as well as lexical or grammatical words are produced infinitely by means of a combination of grammatical/lexical rules. But linguistic instances people really use are limited in usage within a community though categorization of a new construction into a category member is influenced by the degree of frequency of its use. This fact based on everyday usage is not found in a rule-governed stance to a linguistic phenomenon.

2.1.3 Second Focus Effects of attentional processes

Importantly, basic abilities of categorization and/or schematization naturally reflect on a construct of language structures. They also contribute to store up encyclopedic knowledge necessary for a construal of the external world or the event denoted by a construction. Another basic ability of human beings is, for example, manifested in reference point/dominion organizations, figure/ground alignment and "focal attention". The abilities of these kinds play a crucial role for an explanation of a linguistic phenomenon. In the generative paradigm, a variety of linguistic phenomena are used to make sure of verification of syntactic theories. On one hand, a theory in syntax deals with linguistic phenomena successfully and elegantly. But on the other hand, the theory unfortunately fails to explain just another linguistic phenomenon. Chomsky (1977) claims that in some cases idiosyncratic lexical attributes of the verbs play an important role in a decision of the grammaticality. But this statement is not necessarily true and is also hasty, superficial. The syntactic theory sometimes or often falls far short of capturing the real conditioning factor of linguistic phenomena. Syntax is distinct in principle from the kinds of human knowledge which underlie encyclopedic knowledge of the external world, and it can be analyzed independently of some considerations of general cognitive structure. However, syntax can not be autonomous in that it forms part of a single structure with importantly basic abilities of human beings as an aspect

of general intelligence.

It is the case with an explanation about a possibility for the categorization of WSFP constructions as its category member. For example, observe the instances as follows:

- | | |
|--|--------------------|
| (14) Who did you see a picture of ? | Chomsky (1977:114) |
| (15) Which novel did you read a passage from ? | Takami (1992:81) |

(14) and (15) are acceptable to be categorized as a member of WSFP. On the contrary, (16) and (17) of the WSFP constructions are not acceptable:

- | | |
|--|--------------------|
| (16) * Who did you destroy a picture of ? | Chomsky (1977:114) |
| (17) * Which novel did you burn a passage from ? | Takami (1992:81) |

Semantic anomaly results in two instances since the inherent semantic values of constitutes with the subject referent and the verb phrase conflict to each other with respect to usually discourse status. In terms of the present account, (16) and (17) can not be categorized as a category member of WSFP. However, when (16) and (17) are further taken into more experience-based considerations, both of two instances reveal a significant cognition of human beings. This shift of the analytic viewpoint places an emphasis on construction grammar approach. "Focusing" abilities of human beings exercise to be a notion of great importance to the approach. Linguistic analyses motivated by spatial cognition are engaged in the enterprise of the cognitive mechanism of focusing. Cognitive focus is essentially a selective control mechanism and is in nature the cognitive correlate of visual focus and other orienting behaviors. Especially, "focusing" often serves to select the prominent entity as a figure one to set up a reference point/dominion organization. Any linguistic constitute as well as a physical entity can be selected for cognitive focus as a salience.

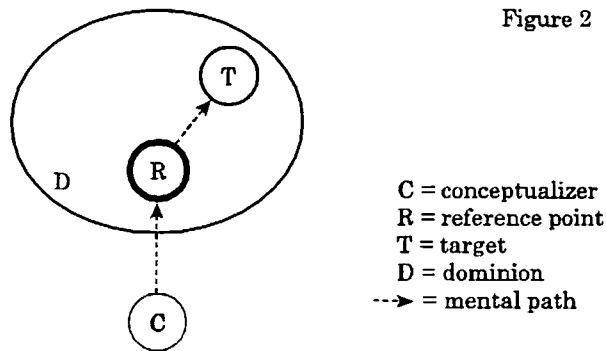
2.1.4 Reference Point/Dominion Organizations in WSFP

A *wh*-phrase is conceptually central and primary prominent on WSFP constructions. It leads to the point that a status of the *wh*-phrase shows consistency with the notion of "starting point" first introduced in MacWhinney (1977).⁸ A conceptualizer is able to invoke "starting point" as a salience. A certain *wh*-interrogative that serves to attract focal attention from a conceptualizer reasonably involves a reference point/dominion organization.⁹ An initial constitute serves as a reference point for the entire event or situation profiled by the remainder of the sentence: a reference point is either intrinsic or contextually determined in general. Langacker (1999:174) proposes a cognitive model

⁸ MacWhinney emphasizes the importance of an initial constitute in a sentence. The point is that both a speaker and a hearer tend to use special techniques of "starting point" for an active construction of the whole body of a sentence. An initial constitute of "starting point" is naturally in focus for the necessity of an active construction of a sentence.

⁹ Langacker (1999:196) points out that certain presentational constructions that serve to introduce an constitute into the scene are attributed reference point function. The constructions involve locative alternations. A prepositional phrases are attributed a reference point and also have topical potentials in the constructions.

on the reference point/dominion organization whose motivation lies in basic abilities such as focus of attention, an establishment of mental contact from one entity to another. The model of the reference point ability is elucidated in Figure 2. The circle C indicates a conceptualizer, R the reference point, T the target, and the ellipse labeled D represents the dominion in which a particular reference point affords a mental access to an instance of the classes of potential targets. Finally, a dashed arrow indicates a mental path which a conceptualizer is able to follow in order to reach a target naturally and properly.



In general, an initial constitute in a sentence carries a topical potential by definition. It furthermore tends to attract focus of attention partly because it stands in the first position of "natural path" which functions as a starting point toward an extended stretch of discourse. These attributes about an initial constitute can also imply that a *wh*-phrase in WSFP retains an inherent topicality and therefore receives prominence relative to other constitutes. From another point of view, a *wh*-phrase constitute can undergo topicalization. The very definition of a reference point/dominion organization evokes the notion of topic. A topic is used as a conceptual reference point for a discourse purpose. A target mentally accessed via the reference point is to be identified with the clausal process in its entirety on a discourse level. Indeed, Langacker (1999:194) suggests that a dynamic aspect of the reference point model is also highly reminiscent of topics, and the clearest cases of topics involve a case in which the target is not a thing, but is clausal or processual in nature.¹⁰ Thus, a role of the reference point's dominion can provide a context with respect to which a content denoted by the target clause is "properly" interpreted, or into which the content is smoothly integrated. The topic functions as a central part of the subjective background context used to construe the content denoted by the target clause in its dominion.

In WSFP, a *wh*-phrase carries topical potentials whereas the remainder of a sentence can be referred to as a proposition. A *wh*-phrase is attributed topical referent and is used to as a conceptual reference point over a stretch of discourse. For example, observe the

¹⁰ Langacker (1999:Ch.6) extends the notion of a reference point/dominion organization to apply to relative clause constructions. The noun modified by a relative clause functions as a topic with respect to the remainder of the construction. The head noun serves as a reference point and thus defines a dominion in which the content of the remainder of the relative clause must be integrated.

instances as follows:

- (18) Who did Sarah take a picture of ?
- (19) Which magazine did George read a passage from ?
- (20) Which job did you seek an appointment to ? Deane (1992:189)

In this cognitive environment, a conceptualizer is successful in the establishment of mental contact via the reference point to reach a clausal target: the reference point is *Which job*, the target clause is *did you seek an appointment to* in (20), for example.¹¹ However, a conceptualizer does not always succeed to carry out such cognitive activities in any contextual environment. The next instances bring about problems by a conceptualizer toward a successful establishment of mental contact from the reference point to the target clause. Observe the instances as follows:

- (21) * Who did Sarah destroy a picture of ?
- (22) * Which magazine did George burn a passage from ?
- (23) * Which job did you study an appointment to ? Deane (1992:189)

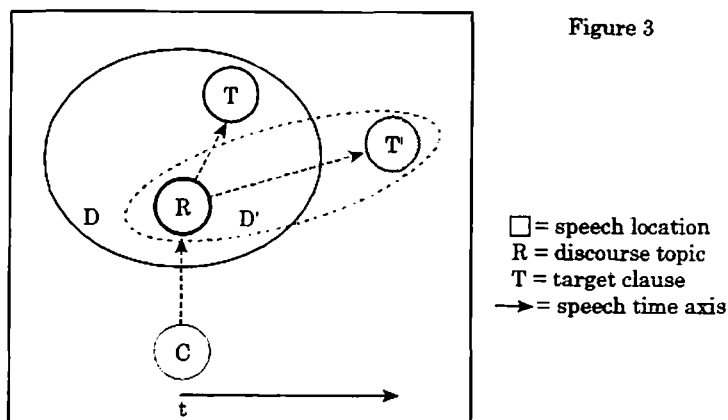
In a beginning of the construal as to each of the sentences, a topical constitute of the *wh*-phrase is firstly singled out for special attention by a conceptualizer. In the contextual environment, a verb phrase such as *destroy a picture / study an appointment* secondly receives focus of attention against default expectations and inference ability. On the other hand, a verb phrase such as *take a picture / seek an appointment* has a lower potential to be in second focus of attention with reference to experience-based knowledge, i.e. the essential contribution of general knowledge. It is argued in terms of the present account that the existence of such an attentional process itself is working condition as to whether or not WSFP constructions can be categorized. Thus, there exist affective factors for the conflict of cognitive processes: i) one function of *wh*-interrogatives includes putting a *wh*-phrase in focus of attention by virtue of its inherent topicality, ii) a verb phrase like *take a picture / seek an appointment* retains extremely less potentials of instances to be in focus of attention. In contrast, the unusual information indicated by a verb phrase like *destroy a picture / study an appointment* which is beyond the conceptualizer's expectation is inherently induced to be in focus of vast attention. The attentional process of this kind is in the great conflict to each other on the construal: both the focusing on a *wh*-phrase and the successive focus of attention on the verb phrase lead WSFP to the failure of the construct. Both a success and a failure of an establishment of the mental path from the reference point to

¹¹ Deane (1992:189) states that job, seek, and appointment serve as cues to the following script, or frame for action sequences:

- (i) People are hired for a job.
- (ii) A person wants to be hired in a job.
- (iii) So the person seeks a job.

An employer offers the person a job. If he accepts the offer, the person now has the job. Thus, it is not surprising that *which job did you seek an appointment to ?* is acceptable. On the other hand, the verb *study* evokes a very different frame in which jobs and appointments play no explicit role.

the target clause are represented in Figure 3:



the arrow indicates a speech-time axis, R and T indicate a discourse topic, a target clause, respectively. For example, in (18), the conceptualizer successfully establishes mental contact from the reference point of *Who* to the target clause *did Sarah take a picture of*. However, in (21), a target clause such as *did Sarah destroy a picture of* retains extremely less potentials within the dominion of clausal levels. The fact that the content denoted by the verb phrase is far from the default construal is represented by the dotted ellipse-labeled D'. In the present account, D and D' are termed the primary dominion, the secondary dominion, respectively. The secondary dominion is generally backgrounded and is out of the conceptualizer's entries of the normal dominion. A failure to establish mental contact by a conceptualizer from the reference point to the target clause is represented by the light dotted-arrow. It can be reasonable from the attentional process that an impossibility of the placement of a preposition on the sentence-final is attributed to the failure to set up the mental path to the target clause.

2.1.5 WSFP from Construction Grammar Perspective

In a specific context, it is proposed that WSFP constructions with a nesting focusing of attentional processes are not able to set up themselves as their category members, two cognitive factors being taken into consideration. A successively attentional process is a decisive factor as to whether or not a construct of WSFP is available. Put differently, it is claimed that a conceptual continuity inherent in WSFP breaks up by virtue of cognitive forces of a successively attentional process. Therefore, given that the information indicated by a verb phrase such as *take a picture / seek an appointment* instead of *destroy a picture / study an appointment* is provided, the existence of a conceptual continuity is naturally conceived by a conceptualizer.

Syntactic theory, as is mentioned above, captures the phenomenon as the difference heavily dependent on idiosyncratic lexical attributes of verbs involved. So the phenomenon turns out to be peripherally of no interest or no importance. In terms of the present account, there are no criteria for a division of the phenomena into the central and peripheral. From a construction grammar perspective, for example, a particular

construction has to be specified in the grammar, and a construal of the sentence or the utterance can not plausibly be attributed to a main verb. The acceptability difference should be accounted for without positing a verb idiosyncrasy. The meaning of the entire construction can be compositionally derived from composing the meanings of the parts of constitutes. A possibility of the combination stems from inferable way which is dependent on experience-based knowledge. A particular combination of constitutes, i.e. the combination of subjects and verbs, is responsible for an explanation of the difference in the acceptability.

A construction as well as a lexical/grammatical word is defined as an individual category in which the information implied by each constitute is interrelated and is highly structured. It is argued from this point of view that an unacceptability of the sentence like (21) is attributed to the difficulties in conceiving a close relationship of the lexical combination of the subject and the verb phrase. That is, whether or not a construction in question is categorized as its member depends on how the situation indicated by a construction fits an individual background frame or a scene of recurring everyday experience. Put differently, the point is that how an agent referent is successfully able to exercise a causal influence on a theme referent with the meaning indicated by the verb phrase. Given that an agent referent is qualified as an entity which can exercise a causal influence on a theme referent, the construction could be categorized in terms of the degree of the lexical closeness: it improves in an acceptability by cognitive forces of the combination of the subject and the verb phrase.

Next cases to be considered should be exceptional in the generative paradigm, yet the present account does not employ such an analytic stance of dichotomy.

- (24) Which actress did the lunatic destroy a picture of? Takami (1992:72)
 (25) Which actress did the lunatic burn/ tear up a picture of? Takami (1992:62)

For example, supposed that the agent referent is *the lunatic* as in (24), the construction is able to bear a membership of the WSFP category as contrasted with (21). The present account is responsible for an explanation of an acceptance for the categorization. As is defined in a lexicon, *the lunatic* refers to a person who behaves in a foolish or dangerous way. The construal of the meanings indicated by these constructions is responsible for the interrelated information of lexically rigid combinations of the constitutes. In (24) or (25), there is no difficulty at all in conceiving a closely lexical relationship between *the lunatic* and *destroy a picture* and *burn/ tear up a picture*. Semantics of *wh*-interrogatives provides a conceptualizer with the idea that a *wh*-phrase in the topical position is conceptually central and primarily prominent on WSFP. Even in such a cognitive environment in which a *wh*-phrase attracts focus of attention, the lexically rigid combination of *the lunatic* and *destroy a picture* or *burn/ tear up a picture* is not secondly in focus of attention. A conceptualizer does not conceive the attentional process any longer. Multiple-foci effects of the attentional processes do not show up in WSFP constructions. However, when *Sarah* in (21) implies the information that the agent referent has a potential for the destruction of a picture, (21) turns out to be categorized as WSFP members, for example. The information about the agent causes the constitutes to be highly interrelated, or closely structured without such an attentional processes.

That is, in a case like this, second focus effects of attentional processes do not bring about a failure to the categorization of WSFP.

- (26) a. Which attack did the pirates bury the treasure after ? Takami (1992:32)
 b. ??/*Which party did John bury the letter after ? Takami (1992:31)
- (27) a. Who did a suspect destroy evidence before ?
 b. * Who did John destroy evidence before ?
- (28) a. What company did a spy steal records from ?
 b.* What company did Steve steal records from ?
- (29) a. Which novel did a critic attack the outstanding writer about ?
 b. * Which novel did Mike attack the outstanding writer about ?
- (30) a. In the movie, which military did Schwarzenegger blast defence systems of ?
 b. * Which military did George blast defence systems of ?

An impossibility of the categorization about each b sentence above can be accounted for along the same line.

The next cases to be considered concern a coordination within WSFP constructions.

- (31) Who does Mary buy and Bill sell pictures of ?
 (underline is added) Postal (1998:104)
- (32) * Who does Mary buy and Bill know a man who sells pictures of ?
 (underline is added) Postal (1998:151)

Postal states that a difference in acceptability between (31) and (32) remains unexplained, but these constructions are known to differ in other mysterious ways: for example, the former can strand prepositions, the latter can not. On the contrary, however, it turns out to be no mystery when the cognitive environment is further taken into consideration. In relation to further cognitive consideration required for the analysis of (32), the notion of image schemas is available to destroy the mystery.

Lakoff (1987) states that image schemas characterize conceptual structures, and also characterize syntactic structures. The idea is found in Spatialization of Form Hypothesis. A part of the hypothesis is described as follows:

Spatialization of Form Hypothesis

- (a) Grammatical structures of constituency relationships are understood as part-whole schemas.
- (b) Grammatical relations like subject and object are understood in terms of link schemas which unite the parts of an object into an integrated whole.

The differing judgement depends on a degree of natural chains implied by a linkage like the symmetrical relationship of A and B. In (31), in terms of link schema, a conceptually natural linkage from schematization is easily available: the coordination *Mary buy and Bill sell* carries more natural continuation by virtue of the symmetrical relationship. The inherent semantic value of a symmetrical discourse status in (31)

WSFP constructions are quite easily interrupted to be categorized by virtue of cognitive forces of an intervening constitute.

Some features of WSFP involve a shaky construction for a support of sentence-final prepositions in its nature: an intervening constitute does not keep a support for the placement of prepositions on a sentence-final. The feature turns out to be a crucial factor towards an analysis of *wh*-interrogatives with sentence-final deverbial prepositions.¹²

3. The Status of Deverbial Prepositions within WSFP

There are a majority of prepositions in English. The prepositions also include a variety of origins historically as is described in section 2.1.1. Among the prepositions with different origins, deverbial and compound prepositions reflect particular and historical interests. On one hand, simple prepositions derived from inflections, nouns, adverbs, adjectives are prototypical with respect to its higher frequency. On the other hand, deverbial and compound prepositions are supposed to be classed into non-prototypical members relative to simple prepositions since the prepositions of these kinds carry a lower frequency and a morphological complexity based on their verbal origin and some kind of heterogeneous combination of the constitutes. The development of formerly verbal forms into prepositions is regarded as an instance of "deategorization." Especially in the present account, compound prepositions are regarded as extensions from the construction schema of simple prepositions. It is suggested that compound prepositions are an instance of "lexicalizations" in that a preposition like *on top of* functions semantically, syntactically very like a simple preposition. A preposition of this kind proves to form a single lexical construction.

(40) What did he lose his balance and fall on top of?

Deane (1992:21)

Deverbial prepositions never fit into WSFP category in any environment while compound prepositions do not always hold true (cf. Deane 1992, Kortmann 1995, Heine and Kuteva 2002).¹³ Historically, many of the deverbial prepositions are loan words from French in the Middle English period. Observe the instances as follows:

(41) * What did Mary write a letter considering?

(42) * Which vacation did John go to Hawaii during?

(43) * Which subject did Ben read a book concerning?

(44) * Which negotiation did Kent stay in his office pending?

For example, *during* has been decategorized from the verb *dure* through the status of present participles. However, the underlying verb stem *dure* has become obsolete and does not exist in present-day English: loss of the verb stem *during* < * *dure*, *pending* < * *pend*. Yet, in general, deverbial prepositions still conserve verbal attributes today. There

¹² A cognitive point of great importance is that *wh*-interrogatives without sentence-final prepositions are much more stable and fixed than WSFP. For example, even if an intervening constitute *usually* is placed between *John* and *doing* in the sentence *what is John doing on Sundays?*, the resultant sentence is perfectly acceptable as in *what is John usually doing on Sundays?*

¹³ The fitness of compound prepositions for WSFP depends on contextual environments.

is a certain amount of overlap in the functional and lexical aspects of both prepositions and verbs. Deverbal prepositions retain a characteristic of "persistence" via a process of decategorization. Put differently, it is argued that the preposition of this kind still reflects its attribute in the Middle English period.¹⁴ Deverbal prepositions consist of two parts: (i) strong combinability with objects of prepositions, (ii) the morpheme *-ing* implying verbal origin found in *during*, *pending*, *concerning*, *regarding (to)* etc. These factors are of crucial importance: a conceptualizer is able to expect that the prepositions are derived from verbs by virtue of experience-based knowledge of verbal origin identifiable for the individual underlying verb forms. This inference is clearly based on the activation of appropriate encyclopedic knowledge. The cognitive process requires that these prepositions carry the attributes of the strong combinability with their objects.

(45) * What century did people employ Gothic architecture during ?

It is assumed that the lexical and morphological attributes identifiable for the individual underlying verb forms demand a direct linkage of the prepositions and their objects. Therefore, a conceptualizer finds unnaturalness in the non-linkage of the prepositions and their objects: the deverbal preposition *during* at a sentence-final is supposed to be in second focus of attention by virtue of the disjunction. As a result, the conceptualizer is unable to construe the target clause *did people employ Gothic architecture during* naturally, properly.

(45) retains a nesting focusing of doubly attentional processes to block the categorization: the conceptualizer is unable to establish mental contact from the reference point *What century* to the clausal target *did people employ Gothic architecture during*. A part of the target clause *did people employ Gothic architecture* contains no unusual information denoted by the clause with reference to the reference point *What century*. The conceptualizer is able to find out a disjointed function with respect to the essentially cognitive connectedness.

An impossibility of the placement of the preposition on a sentence-final is verified by virtue of the substitution of another preposition. Observe the instance as follows:

(46) What century did people employ Gothic architecture for ?

The preposition *for* indicates time duration as well as *during*. In spite of the fact, (46) is categorized as WSFP members. (46) works for environmental evidence in support of the existence of no unusual information retrieved by *did people employ Gothic architecture*.

Another cognitive mechanism behind multiple-foci effects of this kind is relative to an existence of the conceptual discontinuation. The separation, though a deverbal preposition and its object should be linked, naturally brings about a discontinuation. Therefore, given that *wh*-interrogatives with a deverbal preposition except WSFP retain

¹⁴ Other historical aspect of deverbal prepositions involves their short-livedness. For example, **withstanding*, **la-ting*, **continuing* became obsolete. But *lasting*, *continuing* are analyzed as adjectives in present-day English.

a conceptual continuation, the construction is predicted to receive a differing judgement. As an instance, when a deverbal preposition is contiguous with its object, the resultant construction (47) is indeed acceptable.

(47) During what century did people employ Gothic architecture ?

Linguistic data like (47) points out an importance of the existence of "good continuation" towards a successful construct. ¹⁵

Another case to be noticed concerns a preposition derived from past participles. It holds true of the preposition *past*. Originally, the form of *past* in present-day English used to be *psassed*. But by forces of the morphological erosion, the past participle *psassed* has received a reanalysis as *past*. On the status of *past* in WSFP within the present account, Jespersen (1946:189) states that *past* can never be placed at a sentence-final. However, in fact, *past* can indeed fit into WSFP category. Observe the instance as follows:

(48) Which hill did you walk past ?

Although *past* should be contiguous with its object *which hill*, such contiguity is not required. A native speaker of English today conceives that *past* is an instance of just simple prepositions: *past* is no longer one of the instances of past-participle origins because of the morphological erosion. The deverbal preposition has undergone a kind of semantic bleaching in more than a half-century that passed since his statement.

4. Conclusion

WSFP constructions have a number of characteristics to represent particularly semantic and historical interests. WSFP has been analyzed mainly from a rule-governed strategy. In the present account, in contrast, the phenomena have been provided with the elucidation from these three points of view: i) cognitive processes of a nesting focusing of attention, ii) a potential for the categorization of a construction involved into WSFP members with reference to the construction schema, iii) an operation of a conflation of lexical and constructional knowledge necessary for a license of the construction as meaningful units, iv) an application of a reference point/dominion organization model to the categorization of WSFP. The crucial point is that an existence of the multiple-foci alignment of attentional processes has an unfavorable influence on a construct of WSFP constructions. Another crucial point to be noticed is that WSFP constructions are greatly different from *wh*-interrogatives without sentence-final prepositions in that the former is a very shaky, fragile construction. The reason is that

¹⁵ For the absence of a direct linkage of the preposition and its object, WSFP of this kind is not assimilated into the category. Similarly, *wh*-interrogatives without sentence-final prepositions like *what are you usually doing on Sundays ?* are also not to be constructed because of the absence of the direct linkage of the verb and its object, but it does not hold true, of course. As is observed in section 2.1.6, WSFP in its nature is a very shaky, fragile construction as contrasted with *wh*-interrogatives without sentence-final prepositions. In a sensitive environment of the construction, an absence of the direct linkage does not keep a support of the existence of a sentence-final deverbal preposition like in (45).

an extra-intervening constitute immediately before a preposition brings about secondly attentional process, and radically exercises toward a failure of the construct of WSFP constructions. A linguistic research reveals cognitive abilities of human beings behind an ordinary conversation.

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