日本体育大学紀要（Bull. of Nippon Sport Sci. Univ.），46 (2)，119–125，2017

【原著論文】

On the methodology for constructing a semantic network of English prepositions: A case study of the preposition *for*

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Abstract: The purpose of this paper is to propose a new methodology for constructing semantic networks of English prepositions, a network reasonably regarded as psychologically real. As a case study, we will specifically discuss the preposition *for*. Another aim of this paper is to apply our semantic networks to a pedagogical purpose of helping Japanese English learners to learn the semantics of English prepositions more effectively.

(Received: October 31, 2016 Accepted: December 9, 2016)

Key words: prepositions, cognitive linguistics, semantic network, image-schema, polysemy
キーワード：前置詞，認知言語学，意味ネットワーク，イメージスキーマ，多義

1. Introduction

Although such linguists as Dahl (2004) have mentioned that the structure of English is one of the simplest, English does not appear so easy to acquire for English-language learners (ELLs). For Japanese ELLs as well as other ELLs, English prepositions are notoriously difficult to acquire. One reason for this can be attributed to the nature of English prepositions: They are highly polysemous, that is, each preposition displays far more meanings than most English content words and other function words. Traditionally, English education in Japan has not had any useful methodology for effective learning of polysemic words such as prepositions, as it has put most emphasis on grammar with very little attention to lexicon.

Confronting this, many studies in applied cognitive linguistics have suggested better pedagogical tools for promoting learners' acquisition of the semantics of English prepositions. Many of them used a semantic network approach with special emphasis on prototypical meanings, based on which other meanings are directly or indirectly derived. This kind of model has provided Japanese ELLs with a better understanding of English prepositions, and seems to reduce the amount of memory work that ELLs must spend in acquiring appropriate usages of prepositions. Although several varieties of this approach to the semantics of English prepositions have proven effective, they have been criticized for several reasons, one major drawback being their methodology for building semantic networks of these prepositions. Many such networks are not determined on the basis of empirical data, but these researchers' intuition.

The purpose of this paper is to suggest a more persuasive methodology for constructing semantic networks of English prepositions, with the pedagogic purpose overcoming the major drawback of the semantic network approaches of many previous studies. Accordingly, this paper will specifically discuss the English preposition *for*, and we will show how our semantic networks help Japanese ELLs to acquire appropriate usages of this preposition more effectively.

2. On the English preposition *for*

2.1. On the definition of *for* and some difficulties in learning its semantics

To begin, consider how the semantics of *for* have been taught and learned in Japan. One typical way of teaching the semantics of this preposition had had Japanese ELLs memorizing its senses one by one. Here, as examples, are the definitions, or meanings, of

for found in *The New Oxford American Dictionary* (3rd edition).

(1) meanings of *for* listed in *The New Oxford American Dictionary*

(a) in support of or in favor of (a person or something):
They voted for independence in referendum.

(b) affecting, with regard to, or in respect of (someone or something):
She is responsible for the efficient running of their department.

(c) on behalf of or to the benefit of (someone or something):
These parents aren't speaking for everyone.

(d) having (the thing mentioned) as a purpose or function:
She is searching for enlightenment.

(e) having (the thing mentioned) as a reason or cause:
Aileen is proud of her family for their support.

(f) having (the place mentioned) as a destination:
They are leaving for Swampscott tomorrow.

(g) representing (the thing mentioned):
The "F" is for Fascinating.

(h) in place of or in exchange for (something);
Swap these two bottles for that one.

(i) in relation to the expected norm of (something):
She was tall for her age.

(j) indicating the length of (a period of time):
He was in prison for 12 years.

(k) indicating the length of (a distance):
He crawled for 300 yards.

(l) indicating an occasion in a series:
The camcorder failed for the third time.

This dictionary is unique, as the number of senses displayed by individual lexical items in it are much fewer than other English dictionaries, owing to its editorial policy. The *Genius English-Japanese Dictionary* (3rd edition), for example, lists nineteen senses of *for*. But even *The New Oxford American Dictionary* provides too many meanings of *for* for Japanese ELLs to memorize one by one. As far as the author knows, most English grammar books and dictionaries list too many meanings for prepositions, which discourages many Japanese ELLs, and becomes one of their biggest difficulties in mastering semantics of English prepositions.

2.2. Previous studies on semantic network models

Most previous cognitive linguistic studies on polysemy have used semantic network model; meanings are semantically related to one another. For some, prototype meanings play the major roles, and for others image schemata or core meanings govern other meanings. Many previous studies of this kind have revealed the semantic nature of English prepositions, and these findings have been utilized for pedagogical purposes in the field of applied cognitive linguistics. But as might be expected, this approach, like other linguistic theories or approaches, has been criticized for many reasons, one major problem being their methodology for building these semantic models. Most of their models have been constructed on the basis of researchers' intuition, and not on empirical data.

3. On how to overcome the drawback (mentioned in 2.2.)

In order to solve the drawback of the semantic network approach to English prepositions mentioned above, we will argue that typological facts can be used as empirical criteria or data to determine the semantic networks of *for*. The reason behind this claim is the assumption made by most cognitive linguists that the semantic networks of function words are universal, and that we can thus claim that the basic structure of the semantic network of *for* is very much alike to those of pre/postpositions and cases displayed by other languages, whose core functions correspond to *for*. Indeed, many typological studies have argued that the conflation patterns of the different senses expressed by pre/postpositions in natural languages are so similar across world languages that are not genetically and geographically related to one another that we must find possible reasons for this commonality. Most cognitive and functional linguists attribute this to commonalities in our cognitive abilities and experiences.

3.1. On a typological approach

Previous studies of cognitive and functional approaches have revealed that spatial meanings are in most cases the most basic meanings. Following from these findings, we can assume that the spatial sense of *for* is basic, and, therefore, we can consider *for* to be a kind of allative-related prepositions(1). Following our discussion above, if we can find universal conflation patterns in the allative-related pre/postpositions of

Table 1 Conflation Patterns of Allative and Allative-Related Senses
(Ab=ablative; Ag=agent; Al=allative; B=benefactive; Cm=comitative; Cp=comparative; Cs=cause; F=function; I=instrument; L=locative; M=manner; V=via; Po=possessive; Pu=purpose; Rc=recipient; Rs=result; S=substitution)

Conflation Pattern	Language	Nominal Gram
	Primary Sample	
Al/B/Cs/Pu/Rc/S	**Abkhaz**	***-zə***
Al/B/L/Pu/Rc	**Alyawara**	***-ika***
Al/Ab/Ag/B/Cs/Comt/I/Po/ Pu/R	**Bari**	***ko***
Al/L	**Buriat**	***da***
Cs/Pu	**Buriat**	***–tula***
B/Cs	**Buriat**	***–tyløø***
Al/Cs	**Chacobo**	***ki***
Al/Cs/I	**Dakota**	***'i***
Al/L	**Guaymi**	***kukuore***
Al/B/Pu/Rc	**Inuit**	***–mut***
Al/B	**Karok**	***-ihi***
Cs/Ms/Pu	**Karok**	***kuθ***
Cs/Pu	**Karok**	***-ʔ i***
Al/L/I	**Koho**	***tam***
B/Pu/Rc	**Kui**	***ki***
Al/L	**Kui**	***–ni***
Al/Ab/Cm/I	**Lahu**	***gɛ***
Al/B	**Margi**	***ànú***
Al/Ab/L	**Margi**	***ár (àr)***
Cs/Pu/Rs	**Margi**	***gà***
Al/B/F/Pu	**Modern Greek**	***ja***
Al/L/Po/Rc	**Modern Greek**	***se***
Al/L	**Motu**	***dekena***
Al/L	**Mwera**	***ku***
Al/Ab/B/L/Po	**Mwera**	***pa***
Al/B/L/Pu	**Shuswap**	***n-***
Al/Ag/L	**Shuswap**	***t-***
B/Cs/I/Pu/Rc	**Slave**	***-ghoˌh***
B/Pu	**Slave**	***-ko***
B/Cs/Pu	**Tok Pisin**	***bilong***
Al/Ab/Cs/Cp/L/V	**Tok Pisin**	***long***
B/Cs	**Yagaria**	***-e, -se′***
Al/L	**Yagaria**	***-vi′***
	Secondary Sample	
B/Po/Pu	Baka	*na*
B/Cs/Po/Pu/Rs	Diyari	*-naŋka/-ni*
Al/Ag/B/L/Po/Pu/Rc	Evenki	*–du*
Al/Rc	Evenki	*–tki*
Al/B/Cs/Pu	Finnish	*-Vn/-hVn*
Al/Ab(?)/Cs/Comp/F/I/L/M/Po/Pu/Rc/Rs	French	*à*
Al/Ag/Cs/I/L/M/Pa	French	*par*
Al/Rs	German	*in* (+accusative)
Al/L//Pu/Rc/Rs	German	*zu* (+dative)
Al/Pu	Hungarian	*-hoz/-hez/-hőz*
B/F/Po/Rc	Hungarian	*-nak/-nek*
Al/B/Cp/F/Po/Pu/Rc	Kannada	*-ge/-ige/-a:kke*
B/F/Pu	Kashimiri	*ba:path*
Al/B/Po/Rc	Kashimiri	*is/as/an*
Al/Ag/B/L/Po/Pu/Rc	Korean	*–ey*
B./F/M/Pu	Malayalam	*–aayi*
Al/B/Po/Pu./Rc	Malayalam	*-kkə/-(n)ə*
B/Pu	Maltese	*għal*
Al/B/Pu	Marathi	*tā*
Al/Ab/Cs/Cp/L/V	Ngiyambaa	*DHi*
Al/B(?)/Pu/Rs/S	Ngiyambaa	*–gu*
Al/B/Po/Pu	Punjabi	*nűű*
Al(?)/w3Ag/B/Cs/F/I/L/Pa/S	Spanish	*por*
Al/B/F/Pu	Spanish	*para*

Table 2 Frequency of Conflation Patterns, by Sample

Conflation Pattern	Primary Sample	Secondary Sample	Total
Benefactive + Purposive	10	15	25
Allative + Benefactive	8	12	20
Allative + Locative	14	7	21
Allative + Purposive	5	13	18
Causal + Purposive	7	3	10
Benefactive + Causal	5	5	10
Allative + Instrumental	3	4	7
Benefactive + Locative	3	4	7
Allative + Ablative	5	2	7
Allative + Instrumental	3	4	7

human languages, then, we can also find the conflation patterns of *for*. Yamaguchi (2005: 77–78), who studied 68 languages in order to discover the semantic nature of the pre/postpositions of natural languages, suggested the following conflation patterns for allative and allative-related senses(2).

In Table 1, it is evident that there are several relatively high frequency conflation patterns, as also shown in Table 2 (Yamaguchi 2005: 79).

According to Yamaguchi (2005), the first six conflation patterns appear to be solidly motivated by semantic relatedness. The last four, in italics, however, do not; their co-occurrences appear possible only through some intervention, or 'briding role(s)' (Stolz 2001: 321). Table 1 and Table 2 lead to the following diagram of the semantic space of the allative-related functions. (Yamaguchi 2005: 80)

In the subsections below, we will consider how this semantic space was constructed.

3.1.1. The allative sense and the temporal sense

First of all, the 'spatial-as-basic' assumption (see especially Anderson 1971, Haspelmath 1997, Heine et al. 1991) has argued that the allative sense is directly or indirectly the origin for other semantic allative-related senses, and never vice versa. This is also true of the relation between the spatial sense and the temporal sense such in 'until'. As Haspelmath (1997: 66) showed, the most frequent source of the 'until' marker in world languages is the allative sense. The interrelation between spatial and temporal concepts, however, causes a serious problem for our study. Since they are so closely related to each other, and often difficult to distinguish, we very often cannot tell whether either spatial functions or temporal functions are responsible for later evolution of other abstract functions. It is very true that diachronic data (available to the author) on the relationship between spatial senses and temporal senses almost always suggest that temporal senses are derived from spatial ones, and in this sense, the spatial function can be reasonably considered more basic than the temporal function. But because of the problem mentioned above, we will treat these two concepts as a single concept (spatio-temporal concept), and not attempt to answer the question of whether either spatial or temporal functions are responsible for creation of other allative-related senses.

3.1.2. The allative sense, the benefactive sense, and the purpose sense

Our data and Table 2 have argued that the allative sense, the benefactive/recipient sense, and the purpose sense develop in the following order, [allative > benefactive/recipient > purpose]. Based on Table 2, we can argue that the syncretism of the allative sense and the purpose sense almost always implies the benefactive sense or the recipient sense (Hungarian and Ngiyambaa are exceptions), strongly suggesting that the allative sense develops into the purpose sense through the benefactive or recipient senses. Besides, the benefactive and recipient senses can be considered functionally (or semantically) closer to the purpose sense than the allative sense (is to purpose,) because the above list of conflation patterns of relevant semantic functions clearly indicates that the benefactive and

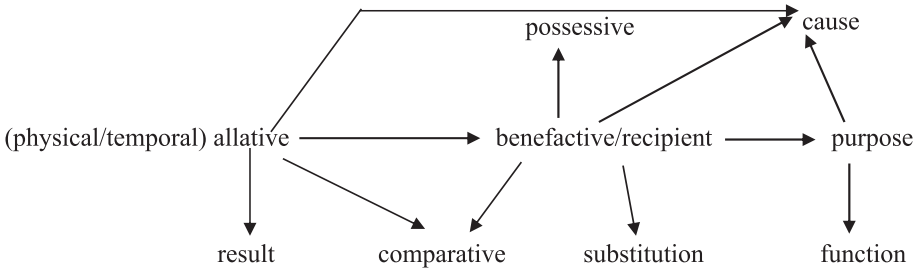

Fig. 1 Semantic-Space Diagram of the Allative-Related Functions

the recipient senses occur with the purpose sense much more often than the allative one does, implying that the benefactive and recipient senses are conceptually closer to the purpose sense than is the allative sense. This appears in harmony with our intuition; that is, that an action performed for the benefit of somebody is an action performed with the purpose of benefiting somebody.

3.1.3. The benefactive/recipient and the possessive sense

The semantic shift from the benefactive/recipient sense to the possessive sense is found in many languages, but this is not the case for *for*, although *for* implies the possessive sense in such cases as 'My mother bought a new dress for me (so that I now have the dress).' For this reason, we will not discuss this semantic development in this study.

3.1.4. The purpose sense and the cause sense

Lastly, let us discuss the historical development of the purpose into the cause sense. This meaning drift occurred for the following reasons. The first reason was due to historical fact (see Matsumoto 1997 and Heine et al. 1991). The second reason is that the concept of purpose almost always seems to imply that of cause, while the latter role does not necessarily suggest the former sense. What this demonstrates is that the concept of cause is in some way or another more abstract than that of purpose, and given that much previous discussion in grammaticalization theory has argued that meaning shift takes place in the direction of less to more abstract (see Heine et al. 1991, Lehmann 1982). It can thus be reasonably concluded that the purpose sense is likely to evolve into the cause sense, and the reverse direction is unlikely to happen.

3.1.5. Other allative-related senses

Consider the following example of Modern Greek for the function sense.

(2) *xrisimpíisa to ksílo já /san bastúni*
used-1sing. the+wood-acc. for as club-acc.
'I used the stick as a club.' (Joseph et al. 1987: 134)

The function marker marks an entity that functions like another entity, as the example in (2) shows. On this sense, we can make the following two points. The first point is that the function sense and the purpose sense show an intense intimacy in the allative-related domain. This may be obvious once we notice that some object functions (similar to another object) for the purpose of the subject (its user).

Now, let us briefly mention the link between the benefactive sense and the substitution sense. As Fillmore (1968) observes, the benefactive sense typically requires an agent. And it is often the case that the agent becomes a surrogate, or substitute performer, carrying out the action, which the benefactor would have done otherwise, such as 'Taro bought lunch for Hanako', meaning 'Taro bought lunch instead of Hanako'. Although no historical documentation supports this link, it seems intuitively obvious to assume it: Semantic extension from more prototypical (or more frequent) to less suggests a direction of semantic change from the benefactive sense to the substitution sense, and not vice versa.

4. The semantic network of *for* and concluding remarks

The ideal situation for revealing the semantic nature of English prepositions may be to depend solely on historical data, but studies on the history of English have not offered sufficient facts for this purpose. What, then, can we do? This study argued that a typological approach would offer a better basis for reconstructing the semantic networks of prepositions, overcoming the difficulties of the previous network approaches to English prepositions. For this purpose,

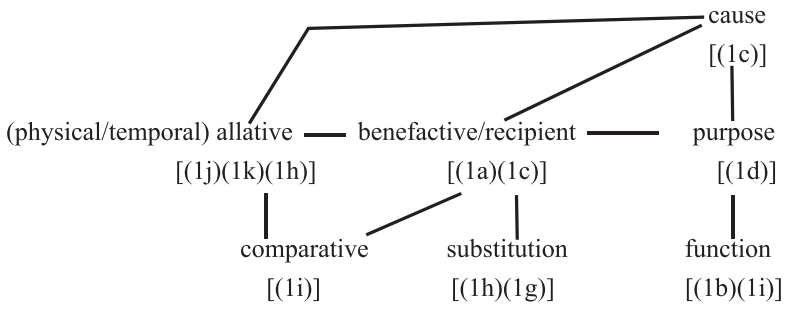

Fig. 2 Semantic-Space Diagram of *for*

this paper specifically discussed the English preposition *for*. Based on the semantic networks of the allative-related senses in Fig. 1, we can suggest the network model of *for* in Fig. 2 with reference to the senses of *for* listed in (1).

NOTES

1. Brief definitions and English examples of the allative and its related senses are as follows.

(a) **allative**: the physical or temporal goal toward which an action designated by the predicate proceeds (e.g. 'He goes to the office by bus.').

(b) **benefactive**: an animate entity for whom a surrogate agent performs some action (e.g. 'She did the shopping for her mother.'); notice that despite the nomenclature, the noun phrase marked by this function word does not necessarily benefit from the surrogate action (e.g. 'Taro lost the game for his team.'), while '(a surrogate) action' implies that this function word appears with an action verb rather than a state verb (e.g. ??'He was sad for Hanako.').

(c) **cause**: an activity without which another event cannot be brought about (e.g. 'He died from starvation.'). Strictly speaking, cause and reason should be regarded as different concepts because the former tends to show an external relation between an event and a resulting event or state (e.g. 'Because he bumped me, I dropped my book.'), while the latter, the speaker's subjective perspective such as belief, or motivation (e.g. 'Because she showed up there, I left.'). This study nevertheless take these as a single role for the following two reasons: first, they are always expressed by a single gram in languages, and secondary, as cause and reason is often "a matter of point of view" (Givon 1991: 300).

(d) **comparetive**: introduces a standard NP ("which indicates the object that serves as a yardstick for the comparison" [Stassen 1985: 26]). Following Stassen (1985: 24), the comparative construction is defined as follows: "a construction in a natural language counts as a comparative construction if that construction has the semantic function of assigning a graded (i.e. non-identical) position on a predicative scale to two (possibly complex) objects".

(e) **function**: an entity which functions similar to other entity (e.g. 'This box will serve as a table.').

(f) **possessive**: marks possessive relationships between two entities designated by noun phrases.

(g) **purpose**: the result or consequence intended by an agentive initiator which is only realized through the activity designated by the verb (e.g. 'He went to the Red Rooster for some take-away.'). In most cases, a purpose construction implies the cause notion (e.g. 'Taro goes to school for his study.' implies 'Taro goes to school because of his study.').

(h) **recipient**: an animate entity to which some physical, or abstract entity is transferred, in the way designated by the predicate. This term by this definition includes 'addressee' in some traditional works. One criterion to differ this role from patient, although this does not always function, is based on the way an animate entity is affected: the former is affected indirectly, while the latter, directly. A recipient NP is prototypically used as an indirect object of ditransitive verbs such as *give*.

(i) **result**: An event or state that immediately follows the event designated by the predicate (e.g. 'He smashed the plate to bits')

(j) **substitution**: an animate entity whose activity is done by another animate entity (e.g.'I'll take coffee instead of tea this morning.')

2. The 68 languages used in this study are as follows (see also Yamaguchi 2005). Their genetic classification is based on Voegelin and Voegelin (1978)

[primary sample]
Abipon (Ge-Pano-Carib), Abkhaz (Caucasian),
Alyawara (Australian), Bari (Nilo-Saharan),
Buriat (Ural-Altaic), Chacobo (Andean-Equatoria),
Cheyenn (Macro-Algonquian), Dakota (Macro-Siouan),
Guay-mi (Macro-Chibchan), Inuit (Unaffiliated),
Karok (Hokan), Koho (Austroasiatic), Kui (Dravidian),
!Kung (Khoisan), Lahu (Sino-Tibetan),
Margi (Afroasiatic), Modern Greek (Indo-European),
Motu (Austrone-sian), Mwera (Niger-Kordofanian),
Palantla Chinantec (Oto-Manguean),
Papago (Aztec-Tanoan), Shuswap (Salish),
Slave (Na-dene), Tok Pisin (Creoles),
Yagaria (Indo-Pacific), Zuni (Penutian)

[secondary sample]
Apalai (Ge-Pano-Carib), Arabic (Afroasiatic),
Babunko (Niger-Kordofanian), Baka (Afroasiatic),
Bihari (Indo-European), Boumam Fijian (Astronesian),
Catalan (Indo-European), Chamorro (Australian),
Diyari (Australian), Dogon (Niger-Kordofanian),
English (Indo-European), Ewe (Niger-Kordofanian),
Evenki (Ural-Altaic), Finnish (Ural-Altaic),
French (Indo-European), Ga (Niger-Kordofanian),
German (Indo-European), Gooniyandi (Australian),
Hausa (Afroasiatic), Hualapai (Hokan),
Hungarian (Ural-Altaic), Indonesian (Austronesian),
Japanese (Isolate), Kashimiri (Indo-European),
Kannada (Dravidian), Korean (Isolate),
Lingala (Niger-Kordofanian), Malayalam (Dravidian),
Maltese (Afroasiatic), Maori (Austronesian),
Marathi (Indo-European), Mongolian (Ural-Altaic),
Ndynka (Creole), Ngiyambaa (Australian),
Persian (Indo-European), Punjabi (Indo-European),
Spanish (Indo-Eurorpean), Sumerian (Isolate),
Turkish (Ural-Altaic), Tuvaluan (Austronesian),
Yoruba (Niger-Kordofanian), Zande (Niger-Kordofanian)

Basically, we examined Primary Sample first and Secondary Sample was used to examine the correctness of hypothesis or claims made by the first one.

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