The Frames and Semantic Network of the English Particle *to*

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1. Introduction

This paper deals with the polysemic nature of one specific English particle - *to* - from a recent cognitive linguistics viewpoint. Just like many other particles, the English particle *to* exhibits a great amount of polysemic properties. This is not surprising, since polysemy is everywhere: all languages necessarily exhibit polysemic properties. Over the course of

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language history, polysemy naturally arises for various reasons, such as metaphorical extension and other semantic shifts. In linguistics literature, as a consequence, much has been said about polysemy from different theoretical frameworks, whether they be synchorinic or diachrnoic. Specifically, polysemy has drawn lots of attention in the recent model of cognitive linguistics, since its assumption that lexical forms are paired with a complex semantic network fits with the prediction that lexical forms will be naturally polysemic. The other interesting phenomenon relevant to this paper is the notion of "space," since the particle *to* essentially functions to express space in our utterance and language use. We human beings live in limited space and time. Our understanding of the world is thus affected by this limitation. Our language use is a reflection of this cognitive restriction. Naturally, the question of how we perceive the notion of "space" seems to be one of the most quintessential properties to understand our linguistic cognitive system. So, just like the case of polysemy, a lot of work has been done on the notion of space in our languages illustrated by some of the recent representative publications such as Langacker (2008), Levinson (2003), Levinson and Wilkins (2006), Talmy (2000), Jackendoff (1999), and O'Keefe (1999) inter alia. Nonetheless, the polysemic nature of (spatial) particles is not extensively discussed in recent linguistic literature. One of the reasons why there is a lack of extensive discussion is perhaps due to the fact that defining polsemy and distinctive meanings for spatial

particles is a highly subjective process, which is noted by Sandra (1998) and Sandra and Rice (1995). True, natural language contains many bothersome nuances, and the variances in meaning can be subtle or disparate. However, according to Tyler and Evans (2003:42), the subjective nature of the polysemy analysis can be minimized if we follow a solid methodology to identify what counts as a distinct sense (for spatial particles). In other words, a study of polysemy can be systematically understood once the question "what is a distinctive meaning" is answered. Based on the two criteria in (1), Tyler and Evans provide an extensive amount of analysis of the English preposition *over*. Even though the methodology is still some what subjective, I agree that it is a very robust approach. Tyler and Evans's methodology is explained in detail in section 2; the information is provided below to provide the readers a general overview of their approach.

(1) Methodology for distinctive meaning identification (Tyler and Evans 2003: 42)
   a. For a sense to be distinct, it must contain additional meaning. A distinctive meaning must involve a different configuration between the TR and LM than found in the proto-scene.
   b. There must be instances of the sense that are context-independent.

Influenced by these recent trends in linguistics, the aim of this paper is to deal with the English preposition *to* from this

cognitive perspective under the assumption that the various uses of *to* are derived from one proto-scene.[1] Each use is connected to the proto-scene in the semantic network. This paper also claims that the proposed semantic network for *to* is linked to constructions that contain this spatial particle. The term "construction" in this paper will be used with a very specific connotation, namely, a linguistic entity that is associated with more or less detailed information about its phonological, morphological, syntactic, semantic, pragmatic, discourse, and prosodic characteristics in terms of Construction Grammar which has been developed by Kay and Fillmore and their colleagues such as Goldberg (1995, 2006), Michaelis and Lambrecht (1996). I also use the term "link" in a very general sense to loosely refer to a connection between the semantic network and the construction. That is, this paper does not propose autonomous syntax and semantics, which is clearly against the Construction Grammar and Cognitive Grammar enterprise. Although the idea behind Cognitive Grammar and Construction Grammar is the same, in recent Construction Grammar notations, it is not easy to see Cognitive Grammar's foci, such as reference, sense, prototypes, proto-scenes, and propositions. Influential as they are, Fillmore and Kay (1995), Kay (1997), Kay and Fillmore (1999) do not include any direct

1) One reviewer pointed out that the use of the term "proto-scene" must be carefully assessed, because proto-scene presupposes an early usage. In this paper, the earliest attested usage of to is identical to the proposed "proto-scene." It thus should not pose a problem in understanding the discussion.

reference to cognition. The opposite is true for Cognitive Grammar, entertained by Langacker (1987, 1991a, b, 1999) and Taylor (2002), where the focus mainly falls within the conceptual structure. However, there is no doubt that the cognitive dimension of Construction Grammar has been of quintessential nature since the conception of Construction Grammar in the early 1980's, as clearly stated by Kay (1995: 171) as below.

> Construction Grammar . . . is a non-modular, generative, non-derivational, monostratal, unification-based grammatical approach, which aims at full coverage of the facts of any language under study without loss of linguistic generalization within and across languages.

As stated, Construction Grammar aims at full coverage of the facts of language. Nevertheless, as far as I am aware, the recent research done within the Construction Grammar framework has centered around syntactic phenomena. This paper attempts to bridge this gap by incorporating Fillmore's (1982) concept of "frames" within the Construction Grammar framework.[2] The concept of "frames" will be used broadly to

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2) One reviewer questioned if this generative, unification-based property of Construction Grammar can really be compatible with the cognitive grammar's rationale, which is essentially non-generative and non-unification-based. The comment has a valid point. My attempt to connect Fillmore and Kay's Construction Grammar (CxG) and cognitive grammar must be understood as part of recent attempts to connect cognitive linguistics and frame semantics. The notion of "frames" has been one of the major concerns in both frameworks. However, the treatment of frames within Construction Grammar is still in its

refer to a model of semantics of understanding (as opposed to truth-conditional semantics). In other words, words and constructions evoke an understanding, a frame. When he/she hears an utterance, the listener evokes a frame to understand the speaker's intention. This theoretical assumption will be applied in the analysis of *to* by claiming that *to* evokes a certain frame which is shared by the speaker and the hearer.

The organization of this paper is as follows. Section 1 is an introduction to this paper. Section 2 introduces the methodology proposed by Tyler and Evans (2003) to identify distinctive meanings. In section 3, based on five criteria proposed by Tyler and Evans (2003) and Langacker (1987, 1991b), the proto-scene of *to* is identified. Section 4 is the main section of this paper. This section explains each distinctive meaning with its relevant examples in conjunction with the semantic network of *to*. Section 5 provides a sample analysis of one of the *to*-constructions from a recent Construction Grammar point of view. Some theoretical implications will be briefly discussed in section 6 to conclude this paper.

2. Identifying distinctive meanings of *to*

As addressed in the introductory section of this paper, identifying distinctive meanings of a highly polysemic lexical item is not always clean-cut. To illustrate Tyler and Evans's

early stage. The attempt made here is to show the possibility of the link.

(2003: 40-43) example of *over*, let us consider (2) and (3). Since *over* designates in both (2) and (3) the trajector (TR) located higher than landmark (LM), the same basic TR-LM configuration holds for both (2) and (3). In other words, the proto-scene can be directly applied to both cases.

(2) The helicopter hovered over the ocean.
(3) The hummingbird hovered over the flower.

The following pair of examples shows contrast with (2-3). In (4) and (5), the meaning of *over* is "covering the hole." This meaning cannot be depicted as the proto-scene of *over* that locates TR higher than LM. This sense also cannot be derived from context, since the "higher-than" notion cannot be extended to (4) and (5). TR is physically lower than LM in (4), while TR is located next to LM in (5). Neither of them is contextually derivable from the "higher-than" sense. Therefore, the covering sense is a distinctive sense.

(4) Joan nailed a board over the hole in the ceiling.
(5) Joan nailed a board over the hole in the wall.

The discussion on the English *over* played a very important role in cognitive linguistics to prove that the polysemic property of *over* is connected in a network structure. Since Benett (1974), many researchers conducted important research on the polysemic nature of *over* as illustrated by the representative

works such as Lakoff (1987), Brugman and Lakoff (1988), Dewell (1994), Kreitzer (1997), among others. Among these, Lakoff (1987) and Brugman and Lakoff's (1988) work is worth noting in that their work was a pioneering work on the subject. The Brugman/Lakoff framework takes a very fine-grained approach to the semantics of prepositions. As a result, Lakoff's model provides 24 distinctive senses for the preposition *over*. Even though this fine-grained approach has an advantage of accounting for the difference in meaning of over indifferent contexts, several scholars including Ruhl (1989), Rice (1993), Sandra (1998), Sandra and Rice (1995) questioned the methodology of the approach. The details of their criticism on the Brugman/Lakoff framework vary, but their criticism boils down to one fact: the Brugman/Lakoff framework fails to distinguish between what is coded by a lexical expression and the information that must be derived from context, background knowledge of the world, and spatial relations in general. This criticism made by the researches mentioned above is the crucial weakness of the Brugman/Lakoff framework. Then, we need to rethink the approach to see if there is a way to avoid the methodologically unconstrained analysis presupposed in the Brugman/Lakoff framework.

Congruent with the claims of Tyler and Evans (2003), I claim that the preposition *to* is a spatial particle with a distinct and highly systematic polysemic network -- a conceptual network that captures a myriad of meanings embodied within the word

-- from which many non-spatial usages of the word are derived. In other words, *to* exhibits an intricate and systematic relationship with other lexical items in its conceptual structure. The *Oxford English Dictionary* and *American Heritage Dictionary* claim to offer over 30 semantically distinct usages of *to* serving as a preposition. I claim that these distinctions are closely related through the semantic network, and have determined that 17 of these usages can be considered distinct senses through the methodology for determining distinct senses as outlined. The methodology addressed in (1) in section 1 is applied to the usages of *to* in sentences gathered from various data sources, such as the *Oxford English Dictionary* and the Google search engine, in order to determine if a usage constitutes a distinct sense or not. For instance, in determining the distinct senses that compose the various clusters of senses -- as illustrated in detail later in section 4 -- a meaning that is clearly disparate from the primary sense must be embodied within the preposition. To be a distinctive sense, the usage of *to* must imply a non-spatial relation, or at least a spatial relation that functions differently from the spatial relation encoded in the primary sense. The proto-scene of *to* is roughly "expressing motion directed toward and reaching," which is discussed in detail in section 3.

It is clear to most native English speakers that the spatial relations in (6) and (7) are different from the primary sense even though space is expressed with the same lexical item;

therefore, the usages can be rendered as distinct. In sentence (6), *to* implies a non-spatial relation, which is roughly identical to the resulatative. That is, (6) is almost identical to "The glasses are broken and they exist as pieces." In sentence (7), the usage is a distinct sense because the spatial relation expressed is again different from the proto-scene. In this sense, the schematic trajector (bandage) is represented as making salient contact with a destination or object (wound), much like "against." Because the idea of "against-the-LM" is clearly expressed with this usage, additional meaning arises. In addition to adding additional meaning by expressing a non-spatial relation or expressing a spatial relation that is distinct from the primary sense, a usage of *to* must also not rely on a given context in order to function as a distinct sense. Neither (6) nor (7) are derivable from the primary sense from the context. The primary sense does not explain the resultative state of the breaking event in (6) even with contextual information. Similarly, in any context, the meaning "against-the-LM" is derivable. As a result, (6) and (7) are rendered distinctive meanings.

(6) The glasses are broken to pieces.
(7) Tobias pressed the bandage to the wound.

Identifying the distinctive meanings of *to* is related to the identification of the proto-scene. In section 3, the proto-scene of

to will be identified by applying Tyler and Evans's criteria for the identification of a proto-scene.

3. Identifying the proto-scene of *to*

The initial step in determining the semantic network of a word is to determine what Tyler and Evans have dubbed the "proto-scene" – the primary sense of the word. This can be achieved through the following five criteria provided by Tyler and Evans (2003: 47) which are based on Langacker (1987, 1991b).

1. Earliest attested meaning
2. Predominance in the semantic network
3. Use in composite forms
4. Relations to other spatial particles
5. Grammatical predictions

First, the earliest attested meaning in the historical development of language tends to be a primary sense (or proto-sense). Second, if one usage is the primary sense, it is found in the semantic network predominantly. Third, if a sense fails to participate in a composite form, it is suggestive that the sense may not be the primary sense. Fourth, the meaning of a spatial particle is partially determined by its contrastive particle. In other words, if there is a contrastive particle for a certain sense of a spatial particle, the sense can be a good candidate for

a primary sense. Finally, to be a distinctive sense, the sense should be extensible to other senses.

Applying these criteria one by one to each of the distinct usages of *to* as offered by the *Oxford English Dictionary* and *American Heritage Dictionary*, I claim that the primary sense -- or proto-scene -- for *to* is as illustrated in Figure 1, based upon the fact that it meets each of the criteria outlined by Tyler and Evans. The dotted line on the left represents a starting point of a schematic trajector; the arrow represents directed motion; the shaded circle and dark line represent a final position where the schematic trajectory reaches and/or makes contact with the goal or recipient. This scene can be verbalized as "expressing motion directed towards and reaching; in a direction towards so as to reach." In other words, there is a salient motion reaching a goal and often a recipient. The proto-scene must be interpreted as a combination of PATH and orientation. Here, one object (SOURCE) moves from one location to another (GOAL) by way of a path. At the same time, the location of the TR at the beginning of the process and the endpoint must be emphasized in understanding the proto-scene of *to*.

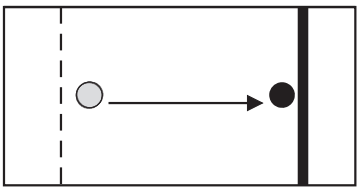


Figure 1. Proto-scene for *to*

According to *Oxford English Dictionary*, the earliest attested meaning of this usage of the spatial particle *to* dates back to the epic *Beowulf*, which experts date back to somewhere between the 8th and 11th centuries A.D. This is shown in sentence (8). Other early usages include the writings of King Ælfred at the close of the 9th century shown in sentence (9); further distinct usages of *to* did not emerge until the 10th or 11th century.

(8) Ic ðær furðum cwom, to ðam hring-sele.
(9) Mon lædde Aristobolus to Rome gebundenne.

These usages are akin to what would be expressed today as a spatial location, as in sentence (10).

(10) Horatio traveled to Boston.

The second criterion is predominance in the semantic network. Tyler and Evans explain this to mean that the usage is found in the majority of distinct senses within the network. After fully developing the semantic network, the evidence attests that the sense expressed in (8 – 10) is predominantly used in the network. More specifically, there are 6 distinctive senses that are directly related to "directionality" in the semantic network that is provided in section 4, where we will further discuss these issue.

The third criterion is use in composite forms. There are

many composite forms that contain *to*, such as *onto, into*, and *towards*, shown in (11-13). In all of these composite forms, the *to* preserves the primary meaning "in a direction towards so as to reach." *Oxford English Dictionary* illustrates that all of these forms were derived from two morpheme combinations: *on + to, in + to, to + ward(s)*. In these derived forms, the participated meaning of *to* is "physical motion" or "directionality." Since other meanings of to hardly participate in the composite forms, this observation provides us a clue that the only sense that participates in forming a composite form, which is "physical motion" or "directionality," might be considered as a candidate for a primary sense.

(11) The squirrel jumped onto the bird feeder.
(12) Carl drove into the lot, attempting to locate a place to park.
(13) All rivers west of the Continental Divide run towards the Pacific Ocean.

As for the relation to other spatial particles, we should be able to determine a spatial particle with a meaning that is in opposition with *to* and thereby forms what Tyler and Evans (2003: 48) call a "contrast set." The word *from* is a strong candidate for being in contrast with *to*. Upon reading the two following sentences, one notes the distinction in meaning that arises from the spatial particles. In this example, *the bride*, or TR, is heading towards a final position -- *the chapel* -- with the intention of reaching it as in (14). By contrast, the opposite

path of trajectory is occurring in (15); *the bride*, or TR, is following a path away from the initial position, *the chapel*, so as not to reach it; the destination is unknown.

(14) The bride ran to the chapel.
(15) The bride ran from the chapel.

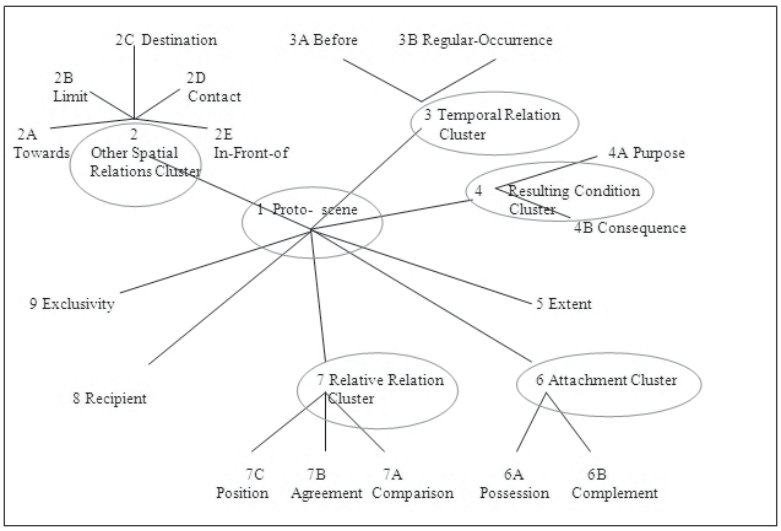
Grammatical prediction is a direction of evolution of the primary scene. From the original meaning of *to*, the acquisition of some new meanings seems to be very natural. For instance, the sense "directionality" can be extended to a new meaning that has a resultative connotation when the directionality presupposes the moving object's contact with something solid at a high speed. It also can derive a new sense "possession" when the result of directionality -- a physical contact -- is metaphorically extended.

4. The semantic network of *to*

Based on the proto-scene provided in section 3, this section provides a semantic network for *to*. Figure 2, "The Semantic Network for *to*," presents a diagram of a highly systematic polysemic network. At the center of the network is a circle labeled 1, representing the proto-scene as determined by the criteria given above. Each line branching out represents an additional sense or cluster of senses. Related senses are

clustered together in groups that represent their relations, such as usages representing spatial relations, temporal relations, or other systematically related groups. The terminal nodes in the network represent each of the individual additional senses. Following this diagram is a detailed discussion of each sense along with examples illustrating how the usage of *to* functions in Modern English. Any usages that are archaic, obsolete, or limited to a specific dialect are not included in this analysis.

Figure 2. The Semantic Network for *to*



Note in Figure 2 that there are 17 distinct senses divided into 5 clusters of meaning that stem directly from the primary sense. Recall that each sense is rendered distinct in accordance with the two criteria put forth by Tyler and Evans presented

previously: each sense must contain additional meaning, and each sense must be context-independent. The remainder of this section will expound on this by detailing each of the 17 senses. Each subsection explains each cluster. The number within brackets at the end of the section title means the number assigned to the semantic network provided in Figure 4.

Here, we need to explain how each sense is connected within the network. One possibility to account for the relationship among the distinctive senses in the network is to adopt the notion of egocentricity (or embodiment) proposed by Heine et al. (1991). According to Henie et al., basic source concepts have a strong tendency to be concrete objects, processes or locations over time. In order to explain grammaticalization, Heine et al. proposed a source domain hierarchy (1991: 55) as in (16). For example, they argue that Possession might be located to the right of Space.

(16) Person > Object > Activity > Space > Time > Quality

Even though we are not dealing with grammaticalization in this paper, Henie et al.'s metaphorical extension approach to grammaticalization gives us some general ideas on the semantic extension of *to*. The particle *to* began as a spatial particle, then it underwent metaphorical extension through Time to Quality. As illustrated in Figure 2, Other Spatial Relations [2] is a direct extension of the original meaning Space. Just like Henie et al.'s

explanation of Possession, Attachment [6] and Relative Relation [7] are located somewhere to the right of Space in their hierarchy. Temporal Relation [3] in the semantic network is an extension of Space to Time. Resulting Condition [4] is the last stage of Heine et al.'s hierarchy: Quality. This hierarchy answers the question of how the meanings are connected by way of metaphorical extension. As the detailed account of the metaphorical extension is beyond the scope of this paper, I will not explain how each sense is embodied in this paper.[3)]

4.1 The Spatial Relation Cluster [2]

The five distinct senses in the Spatial Relation Cluster (Towards, Limit, Destination, Contact, In-Front-Of) all derive directly from the proto-scene of motion directed towards and reaching the goal. In addition to merely expressing a direction towards (so as to reach), the senses within this cluster contain additional meaning with regards to expressing a spatial relation by expanding on the meaning offered in the proto-scene. This additional meaning does not directly deal with spatial relations, such as Limit [2B] as illustrated in (17)

3) The other important point made by the same reviewer is the question of how to deal with the *to* used in *to*-Infinitive constructions. According to *Oxford English Dictionary*, historically, these two types of *to* stemmed from one usage. Overtime, the Infinitive *to* lost all its meanings and become a sign of the Infinitive. Even if I agree with the reviewer that investigating the meaning is a necessary step to fully understand the semantic network of the particle *to*, I acknowledge that the focus of this research is only on the modern day usage of *to* as a preposition.

(17) John pushed her to the limit.

Sentence (18) illustrates an example of [2C] which is "destination" in the semantic network provided.

(18) Under the referendum, students will go to the new school this fall.

The spatial particle *to* has a sense that is roughly identical to towards (2A). There is a clear distinction between *to* and *towards*. The distinction between the proto-scene and [2A] is that while the proto-scene emphasized both PATH and orientation, *towards* [2A] focus on orientation only. This distinction arises from the suffix *-ward(s)*, which is used to express "in the direction of." As recent as the 19th century, it was used widely to express direction, as in (19). Over time, the usage of the suffix is limited to *towards, upwards, downwards, forwards*, and *backwards*.

(19) Yet the bent of their hearts will still be God-wards, Christ-wards, Heaven-wards, and Holiness-wards (T. Brooks. *London's Lament.* 1670).

The word *towards* is an independent word of *to* in Modern English. Nonetheless, in some cases, *to* is fully interchangeable with *towards* as shown in (20) and (21). For this reason, we can determine and identify this usage as a distinct sense.

(20) He pointed to a clump of trees.
(21) The house has many windows that open to the south.

Within the realm of spatial relation, *to* is also used to indicate the limit of a movement or extension in space; reaching as far as (Limit [2B]). This can be actual, physical space, or metaphorical or understood space as illustrated in sentences (22) and (23). This sense stems directly from the proto-scene of motion towards and reaching, yet is completely context-independent since the objects and landmarks can be tangible or intangible, thereby rendering a distinct sense.

(22) The thermometer has risen to 32°.
(23) The ocean water was clear all the way to the bottom.

In the sense Destination [2C], any motion has already occurred and the TR has arrived at the given destination. This usage denotes a spatial relation, but it neither expresses the idea of *towards* or a limit. This thus must be considered a distinct meaning since it adds additional meaning to the proto-scene, as in (24) and (25).

(24) Some 450,000 miners were back to work today.
(25) He was sentenced to hard labor.

In the sense of Contact [2D], the schematic TR is represented as making salient contact with a destination or object, much as

against. The previous senses of *to* do not hold the same meaning when used, thereby rendering a distinct sense as shown in (26) and (27).

(26) The mother cradled her child to her bosom.
(27) Apply plenty of yellow soap to the towel.

The Facing sense [2E] of *to* cannot be derived from context. As the illustrated in (28) and (29), there are two profiled objects in relation to one another. In other words, one object faces the other without "moving toward."

(28) The comedian was on stage with his back to the audience.
(29) Jack and Jill stood face to face.

4.2 Temporal Relation Cluster [3]

The senses composing this cluster (Before, Regular-Occurrence) are all distinct. They each derive from the proto-scene in that there is a salient relationship between two points, and a specified destination in time is clearly reached. Additionally, as can be inferred from the fact that they represent time rather than space, each sense is distinct since the meaning conveyed here is non-spatial in nature. The temporal relations are illustrated in (30) and (31).

(30) A Halloween nightmare turns into a minute to minute miracle.
(31) The train left the platform at twelve minutes to the hour.

In the Before [3A] sense, the schematic TR is the point at present and the given destination serves as a point or event to be reached in the future. In this case, *to* can easily be replaced with *before*, adding distinct and additional meaning to the proto-scene as in (32) and (33).

(32) It was exactly a quarter to four o'clock.
(33) How long is it to dinner?

Although the Regular-Interval [3B] sense is independent of context, it does rely on being collocational: occurring between two nouns. While it is limited to expressing regularity among the passage of time, this sense of *to* is entirely disparate from any other usages, particularly those denoting relationships between points in time or space, rendering a distinct sense as illustrated in (34) and (35).

(34) Her mood shifted from hour to hour.
(35) The ebb and flow of the tide is a day to day occurrence.

4.3 Resulting Condition Cluster [4]

The senses contained within this cluster (Purpose, Results) are those that distinguish either a purpose or intention, or a resulting consequence. These stem from the proto-scene through the notion of purposeful direction and a figurative or literal destination being reached. As with the Temporal Relation

Cluster, each sense within this cluster conveys non-spatial meaning. Yet each sense in this cluster is quite distinct from the senses contained in the Temporal Relation Cluster, as evidenced in (36) which is an example of Purpose [4A]. (37) illustrates an example of Results [4B].

(36) One's actions do not always justify the means to an end.
(37) Tobias took the vases and smashed them to pieces.

The Purpose [4A] sense is used to indicate aim, purpose, intention, or design. The prepositional phrase complements the verb by answering why the semantic value encoded in the verb was or will be completed as illustrated in (38) and (39).

(39) The captain came to our rescue.
(40) You sat down to writing at your bureau.

To is also used to describe a given result or effect (Results [4B]). It is distinct from the proto-scene in that it focuses on the resulting condition. It stems from the proto-scene in that the resulting condition is clearly reached, or is at least intended to be reached, as in (40) and (41).

(40) Bring the mixture to a rapid boil.
(41) Fezzik nursed his inebriated friend back to health.

4.4 Extent [5]

The usage of *to* indicating Extent [5] is distinct from the usage indicating Limit [2C] in that *until* cannot be substituted and retain the same meaning. This sense indicates the full extent, degree, or amount. It is independent of context and does not relate to spatial or temporal relations. Rather, the nominal complement following *to* is more abstract in nature and highly figurative, often used as a metaphor to illustrate the range or depth of extent. This is illustrated in (42) and (43).

(42) Sir Tomkyn swore he was hers to the last drop of his blood.
(43) We were laughing at this to our heart's content.

The conveyed meaning derives from the proto-scene, depicting and reaching an end-goal, yet the end-point is non-spatial. Therefore, this usage can be determined as a distinct sense because it fulfills the two criteria set forth for distinction of senses.

4.5 Accompaniment Cluster [6]

Both senses contained within this cluster (Possession, Complement) use *to* to indicate the idea of accompaniment: either that of possession, or as a complement thereof. Each of these is clearly distinct from the proto-scene as they are non-spatial and thereby distinct from each other. Additionally,

the senses contained within this cluster are distinct from those in other clusters in that *to* is used here to designate a form of accompaniment, such as Possession [6A] as in (44). (45) is an example showing the Complement [6B] sense.

(44) There's a lot to him that doesn't show on the surface.
(45) This song is sung to the tune Aura Lea.

The Possession sense [6A] indicates appropriation or possession, similar to the genitive *-'s* or *of*. In this sense, *to* could be preceded by *belong*, creating the phrasal verb *to belong to*. Yet the preposition can also easily stand on its own and indicate the same meaning, thus it is free of context and can be determined to be a distinct meaning shown in (46) and (47)

(46) Look for the top to the jar.
(47) The Hall now forms the vestibule to the Houses of Parliament.

When *to* is used to designate something occurring as a Complement [6B], *to* is able to indicate the completion of an event denoted by the verb. The meaning of this usage is distinct from that of the proto-scene in that there is no motion in a reachable direction in (48) and (49).

(48) The nymphs danced to the lively tune.
(49) I fell asleep to the soothing sound of the surf.

4.6 Relative Relation Cluster [7]

These senses (Comparison, Agreement, Position) detail the relation between two objects, similar to Facing [2E]. However, unlike the relation in [2E], the relation between the points in the senses contained in this cluster is relative to the position of the other. Additionally, the TR is often figurative rather than spatial in nature, dealing with the abstract rather than the concrete or physical world, as illustrated in (50-52)

(50) The men are as noodles to her.
(51) The countryside boasted one house to about five square miles.
(52) They were unable to see how they lay to each other.

The Comparison sense [7A] expresses the comparison and opposition of two or more things, often in respect to value. This sense is often used to express superiority/inferiority or the odds of a wager. This *to* could be replaced by the phrase *in comparison with* as illustrated in (53) and (54).

(53) Every critic agreed that this book was far superior to all others.
(54) Mr. Gladstone's motion was carried by 337 to 38.

In the Agreement [7B] sense, *to* is used to express agreement or being in accordance with. This sense is figurative rather than spatial in meaning, therefore adding additional meaning to the proto-sense without relying on context, as shown in (55) and (56).

(55) Mr. Temple is not a man to our taste.
(56) I am looking for a job suited to my abilities.

The Position [7C] sense is inherently a spatial relation. However, this usage falls under the cluster of Relative Relation in that the two (or more) entities expressed are given in position relative to each other. Just as in the Comparison sense [7A], the complements are dependent upon and relative to one another, as in (57) and (58).

(57) The brook runs parallel to the road.
(58) The shadows are inclined to the horizon.

4.7 Recipient [8]

To, in the Recipient [8] sense, is used to express response in regards to, as well as indicating the object of address, such as in a speech. This usage functions similar to *for*, as can be illustrated in sentences (59) and (60). This usage is disparate from the notion of spatial and temporal relation in that it expresses communication; yet it remains congruent to the fundamentals of the proto-scene by expressing a distinct end that is reached, albeit non-spatially - in this case, a recipient.

(59) The revelry continued with continual toasting of health to the royal family.
(60) Marianne eagerly awaited an answer to her letter.

4.8 Exclusivity [9]

This sense is a distinct sense, although its usage relies upon (anaphoric) following the particle. This sense is used to specify a sense of exclusiveness or separateness, as illustrated in (61) and (62). It is a distinct sense because it cannot be inferred from any other usage or sense of the word and the meaning it conveys is not apparent in any other sense and is inherently non-spatial.

(61) We had the airplane to ourselves.
(62) She had the railway carriage all to herself.

So far, we have discussed the polysemic properties of *to* with the notion of the proto-scene and the semantic network. My assumption here is that the proto-scene with the semantic network is projected in the utterance as frames. The assumption being made here must be understood on a par with that of Fillmore's. One major assumption of Fillmorean frame semantics is that words are defined directly with respect to the frame. In other words, the meaning of *to* is understood within the projected frame. The preposition *to* itself exhibits the schematic meaning only, which is identical to the proto-scene provided in section 2. The actual meaning of *to* is specified in relation to other words within a whole construction. To capture this intuition a bit better, I will provide a sample analysis of the English *to* within Construction Grammar in the next two sections.

5. A brief introduction to the Construction Grammar notations and sample analyses

The specific framework which I adopt in my analysis is Filmore and Kay's Construction Grammar (CxG). One big advantage of CxG is that it can represent the notion of "frames" more easily than the other constructional frameworks.[4] Since the other two theories also adopt the notion of "frames" with different technical details, the reason I adopt the Construction Grammar approach must be understood for the purpose of ease of representation, instead of a theoretical advantage. After very briefly introducing the basic notations of CxG in section 5.1, a sample analysis of *to* will be provided in section 5.2

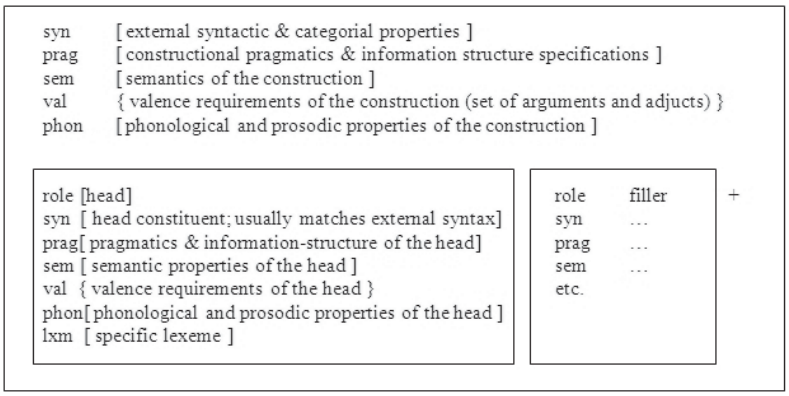
5.1 Basic notations of Construction Grammar

In Construction Grammar, each constituent is represented within a box. Detailed grammatical information is illustrated by

4) There are three major construction grammars actively adopted in recent linguistic research. They include Fillmore and Kay's Construction Grammar, Goldberg's (1995, 2006) Goldbergian Construction Grammar and Croft's (2001) Radical Construction Grammar. Obviously, different theories mentioned here have different foci. Construction Grammar focuses on syntactic relations and inheritance using feature structures and the unification mechanism. Goldbergian Construction Grammar's main interest is categorization relations between constructions. Radical Construction Grammar's main concern is syntactic categories and typological universals. While Goldbergian Construction Grammar and Radical Construction Grammar adopt the usage-based model in which patterns of language use are taken as evidence for the independent representation of grammatical information, Construction Grammar is unification- and constraint-based.

feature structures within angled brackets. To keep track of the unification information, the co-indexation mechanism is used. Figure 3 illustrated a generic constructional diagram which is directly adopted from Fried and Östman (2004: 26). In Figure 3, the valence information is given within the curly brackets. The superscripted Kleene Plus (+) symbol indicates that there must be at least one dependent in this specific construction.

Figure 3. Generic construction diagram



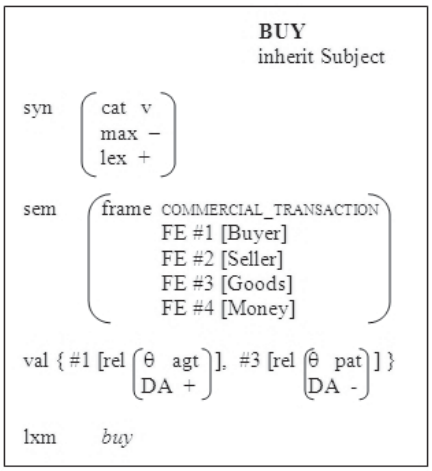
There are several grammatical attributes used in Construction Grammar. A partial list of grammatical attributes and their values used in Construction Grammar is shown in Table 1 (Fried and Östman 2004: 30).

Table 1. Partial list of grammatical attributes and their values

	Attribute	Values
Syntactic domain:	Lexical category	N, Adj, V, P, …
	finiteness	+/- (or fin/non-fin)
	grammatical function	subj, obj, obl, …
Semantic domain:	number	sg/dual/pl/…
	definiteness	+/-
	semantic role	agent, patient, theme, …
Prosodic domain:	prosodic constituent	word, phrase, clitic, …
	intonation	falling, …
	stress	primary/secondary/null
Pragmatic domain:	activation in discourse	null/active/accessible
	register	formal/informal

To illustrate a verbal representation, let us consider the verb *buy* in Figure 5, the "inherit Subject" statement on the right top means "Every fully specified verbal valence has a subject gf (grmmatical function)." That is, "inherit Subject" requires a subject in English sentences. For the semantics of *buy*, we generally need four Frame Elements (FE) that include Buyer, Seller, Goods and Money. In other words, the lexical item *buy* must be understood with respect to other lexical items that are associated with these four frame elements. Valences (val) has two list elements that specify the kinds of relationships that an argument holds to the verb. This specification is achieved through the relationship (rel) attribute. For instance, the verb *buy* requires two arguments: one is assigned an agent theta role, the other theme theta role. The agent theta role must be associated with the subject which is notated by [DA +] 'distinguished argument +'.

Figure 4. A representation of the verb 'buy'



One property I will highlight in this representation is the notion of "frames." The assumption made in the *buy* representation is that the verb projects the COMMERCIAL_TRANSACTION frame with four frame elements. Frame elements are lexically specified for each predicate. Semantic roles specified as FE in Figure 4 mediate relevant frame level participants and their morpho-syntactic expressions. However, not all lexically specified frame elements are associated with their corresponding morpho-syntactic expressions. For instance, in the *buy* example, only three frame elements (BUYER, SELLER, GOODS) can be specified as illustrated in (63).

(63) John bought the book from Mary.

These basic mechanisms discussed here will be applied to the analysis of the English spatial particle *to* in the next subsection.

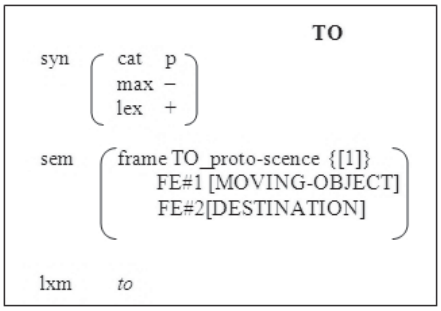
5.2 The analysis

In this section, I will extend the notion of "frames" to the analysis of the English *to*. More specifically, what I am proposing is that the English spatial particle *to* is assigned its own frame elements that contain the participants in the *to*-constructions. Like other concepts, one concept may propose (or be profiled in) several different frames. For example, *to* must be defined relative to the frames of MOVING, TIME, SPACE, etc. The combinations of frames simultaneously presupposed by a concept is called "domain matrix" in terms of Langacker (1987). In the case of our analysis of *to*, the particle *to* has 17 distinguishable frames. The single lexical item *to* is structured within a domain matrix that contains the frames defined. For instance, the proto-scene concept of *to* is presupposed by several different frames such as MOVING and SPACE. The frame elements vary depending on the different concepts (senses) of *to*. In this proto-scene frame,[5] (TO_proto-scene {[1]}), we need 2 frame elements: MOVING-OBJECT and DESTINATION. These

5) For other senses, we need different types of frame elements. The specific frame elements are assigned to the lexical item *to* among all the available frame elements within the domain matrix underlying the concept of the particle *to*, with respect to other lexical items used with *to*. This frame element assignment mechanism is analogous to Fried(2005).

frame elements are then linked to their corresponding morpho-syntactic expressions mediated by the semantic roles of the verbs. The assumptions made here are not surprising, considering the schematic proto-scene of *to*. As discussed in section 2, the proto-scene of *to* is a scene where the TR is moving in a direction towards so as to reach the LM. *To* cannot be understood without understanding something about the semantic and pragmatic functions of the verb and the complement noun phrase that are related to the particle *to*. In fact, this is true of all the objects. A word cannot be understood without knowledge of other word concepts. If we work under this assumption, positing frame elements for *to* should not be treated as anomalous.

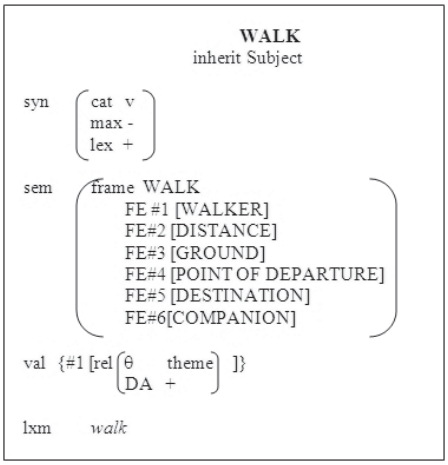
Figure 5. A representation of *to_proto-scene {[1]}*



Now let us consider sentence (64) which illustrates a very generic sense of *to*: TR′s movement toward LM. The verb *walk* is represented as in Figure 6.

(64) William walked to Lake Superior.

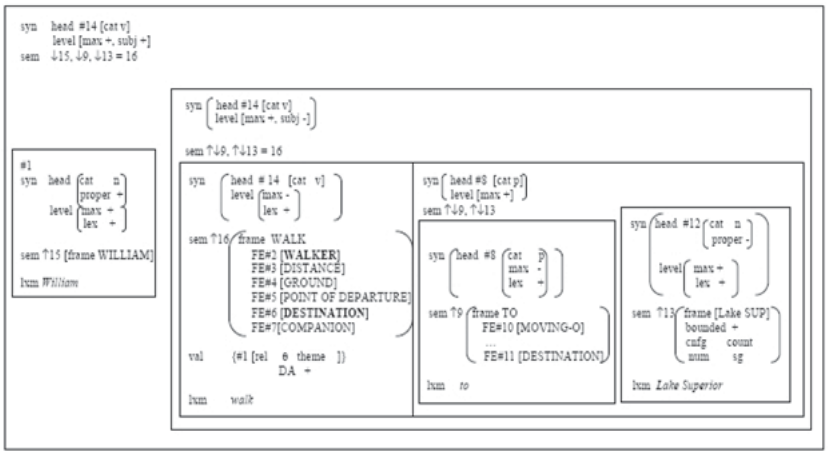
Figure 6. A representation of *walk*



The partial representation of the whole construct *William walked to Lake Superior* is provided in Figure 7. In Figure 7, the downward arrow (↓) indicates that the external semantics integrates the semantics of the constituents marked by the upward arrow (↑). As shown in the semantics of VP *walked to Lake Superior*, the frame elements projected by the verb are specified as identical to those of *to*. It is worth noting that the frame elements projected by *to* are schematic in the sense that the relations between the TR and LM projected by *to* are underspecified until the speaker identifies specific entities, which are often provided by the verb. In this case, FE#10 of *to* is a MOVING-OBJECT without specific information. When it is used in the construct *William walked to Lake Superior*, FE#10

gets a more specific value which, in this case, is WALKER. This specification process is achieved by equating the two semantic values at the VP level as notated by ↑↓13 = 16.

Figure 7. A partial representation of the construct *William walked to Lake Superior.*



This approach necessarily assumes that there is redundancy among the lexical items when we deal with their semantic information, since the frame elements between *to* and the verb are overlapping. Does this type of redundancy pose a problem? As noted by Croft (2001: 121), syntagmatic parsimony in which non-redundancy is assumed adds complexity to the computation of an utterance. According to Croft, there is no *a priori* reason to assume that linguistic representations maximize syntagmatic parsimony. Even if avoiding redundancy might be based on a certain methodological principle (just like compositionality in

truth-conditional semantics), there is no empirical justification that non-redundancy is better than redundancy in linguistic analysis. In fact, redundancy is a natural property of language. Then, finding redundancy in the storage of the semantic information must be understood as a natural consequence too. Given the basic mechanisms of Construction Grammar in conjunction with the semantic network, providing an analysis of (65) becomes fairly straightforward.

(65) The vase is broken to pieces.

Just like the case of (64), the frame elements of *to* are lexically specified for the to in (65). These two frame elements are linked to the morpho-syntactic expressions. After that, the schematic frame elements projected by *to* are specified by the verb, in this case is *broken*, which also lists RESULTS as one of its frame elements under its semantics.

6. Conclusion and some implications

This paper has attempted to analyze the highly polysemious property of the English spatial particle *to*, followed by its link to the recent Construction Grammar framework. The main idea of the analysis provided was that polysemy can be understood by positing a proto-scene for the seemingly unrelated senses. This

view sharply contrasts with Lakoff's (1987) full specification theory that states that polysemy is a more fine-grained approach. In this type of approach, there would be a vast amount of distinctive senses in the semantic network for *to*. By adopting Tyler and Evans's methodology to identify the distinctive meanings and a primary sense, I provided a proto-scene for *to*. The proto-scene then was connected to Construction Grammar by adopting the notion of "frames." The particle *to* projects its own frame elements, schematically rather than with frame identifications. When the relation of *to* with other lexical (or phrasal) items is further identified, the more specific information is identified by equating the frame elements of *to* with those of the verb. This analysis leads us to an interesting question concerning dependent-marking languages (in terms of Nichols 1986) such as Japanese and Korean. The well-known factor here is that, in dependent-marking languages, Case morphology plays a significant role in the morpho-syntactic combination (Cho and Sells 1994, Sells 1995, O'Grady 1991, Park 2002, inter alia). The question arising here is what the role of the inflectional Case (or nominal) affixes in this type of language is. Let us consider sentence (66) and (67), where the verbs of the embedded clauses are omitted, when the verbs are contextually retrievable.

(66) Na-nun, sengkum-ulo, Kyohoy-ey piano-lul, hakkyo-ey computer-lul Sayngkak-ha-n-ta.
I-Top donation-as church-Loc piano-Acc school-Loc computer-Acc think-do-Prs-Dcl

'As a donation, I think that I (would donate) a piano for/to the church, a computer to/for the school.'

(67) Na-nun John-un cip-ey kuliko Mary-nun hakkyo-ey-lako cantam-ha-n-ta.
I-Top John-Top home-Loc and Mary-Top school-Loc-as sure-do-Prs-Dcl
'I am confident that John (is/went/etc.) at/to/for home and Mary (is/went/etc.) at/to/for/in school.'

The similar phenomenon in Japanese is observed by Fukushima (2003) as in (68). Similar to the Korean examples, (68) is understood when the verb is contextually reconstructible. Fukushima explains that the contextual reconstructibility is beyond the realm of the semantics.

(68) Oyatu-wa ringo-ga ni-ko-da.
Snack-Top apple-Nom two-Cl-Cop.Prs
'As for the snack, (I will eat/consume/give Taroo/etc.) two apples.'

As far as truth-conditional semantics is concerned, Fukushima is right. Nonetheless, contextual reconstructibility remains mysterious, since it is difficult to determine what context is in this case. The frame-based approach put forward here might shed some light on these vexing problems. As discussed, the spatial particle *to* projects its own frames that must be understood in relation to other lexical or phrasal items. Similar to this, the Korean locative marker and the Japanese classifier may project their own frames. These frames are

realized in relation to the verbs morpho-syntactically. When there is no overt verb in morpho-syntax, the verb may be missing, keeping the frame structure projected by the spatial (or the classifier) particle intact. Due to the semantic frames in the constructs in question, the missing verbs become completely retrievable, making it possible to reconstruct the verbs "contextually." A similar idea is found in Park (2008). I hope the proposal put forward in this paper will shed light on the properties of the spatial particles in those languages. This, however, will remain for the topic of future exploration.

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The Frames and Semantic Network of the English Particle *to*

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Keywords cognitive linguistics, frame semantics, semantic network, spatial particle, proto-scene, distinctive meanings, Construction Grammar (CxG)

Abstract

This paper deals with the polysemic property of the English spatial particle *to* from a cognitive linguistics perspective. To account for the representation of multiple meanings associated with the single lexical item *to*, it is proposed that the various meanings of *to* are systematically related within the semantic network, and the various meanings are all derived from one spatial proto-scene. Based on the methodology put forth by Tyler and Evans (2003), the proto-scene of *to* is identified as "expressing motion directed towards." The proposed proto-scene is used to identify distinctive senses of *to* based on data gathered from various sources. After fully developing the semantic network for *to*, the relationship between the meaning of *to* and the morpho-syntactic expressions of *to*-constructions is illustrated within a frame semantic approach. Specifically, the semantic information projected by *to* is incorporated in the frame structures in the recent Construction Grammar (CxG) notations.

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