The Semantics of Words that Denote Lower Places or Movements toward such Lower Places

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ABSTRACT
In the literature on the semantics of prepositions, there has been a long dispute as to whether prepositions depict only static relations between LM (landmark) and TR (trajectory) (eg. Tyler and Evans 2003), or static as well as dynamic relations between the two (eg. Dewell 1994). When you consider down and under, at first glance, under seems to correspond to the former in opposition to above, i.e., under denoting a static place that is underneath and above a static place that is above the LM, while down to the latter contrasting with up, i.e., down referring to a dynamic relation of going underneath while up to a movement going upward. However, such simple explanation cannot explain, for example, why going down the road does not mean to “go underneath” the road, and why shot the lion up / down does not simply mean that a lion goes through the movement of “going upwards / downwards”. Through collecting data form COCA (Corpus of Contemporary American English) and other corpuses, and analyzing those data, this paper argues the following two points, namely, (1) linguistic context in which prepositions are used plays a great role in the semantics of prepositions, sometimes making it seem as if the word in question depicts only dynamic meaning, and (2) down and under are not completely synonymous but differ in the roles TR and LM play in their respective semantics.

Keywords: semantics, preposition, cognitive linguistics, TESL

Introduction
Down and under, at first glance, seem to be almost synonymous and only differ in the fact that the former depicts a dynamic relation between TR (Trajector) and LM (landmark) contrasting with up, while the latter depicts a static relationship between the two contrasting with above. Take (1) and (2) as examples;
(1) He went down / up the stairs.
(2) I am under / above pressure.

Down / up in (1) depicts a dynamic meaning in that he moves down / up, while under / above in (2) depicts a static meaning in which I am in or I am over the state of being attacked by pressure.

However, things are not that straightforward. As the first example indicates, if down depicts a movement of going underneath, why does not (3) imply that he goes underneath the road, instead of going, say, south? Secondly, if we use under in the same context, why is it that he moves, i.e., walks, in the position that is beneath the road in (4)? Thirdly, if up and down refer to the movement of going upwards or downwards, why does not up in (5) denote the movement of lion going up?
(3) He walks down the road.
(4) He walks under the road.
(5) He shot the lion up/down.

Also, when we look internationally, interestingly, *down* and *under* are translated into the same word, *shita*, in Japanese.

Stemming from these quick observations, this paper aims to answer the following two questions;

(6) Research question of this paper

(a) What is the semantics of the prepositions *down* and *under*

(b) Do prepositions denote only static spatial relationship or do they denote not only static but also dynamic relationship between TR and LM

**Theoretical Framework and the Methodology**

In order to analyze the semantic differences between *down* and *under*, this paper adopts a cognitive approach to semantics, for that school has been successful in explaining the semantics of the “discarded” words of function words, i.e., prepositions, starting from the study of Brugman (2007), which we will review in the following section.

Also, this paper adopts the method of what Tomasello (2003) calls “usage-based” approach, which firstly collects data and secondly, through analyzing the data, tries to capture the usages of the linguistic element in question, in other words, start from the daily usages of the words in question and try to abstract their usages. In this paper, following such method, we will collect data from corpuses including COCA, NOW, and other corpuses, and then, analyze the data in hand in order to see the semantic differences of the two words in question. Adopting this way of looking at things, not using artificial data, should enables us to see how the two words are actually used in the real world.

**Previous Studies on the Semantics of Prepositions**

In the literature, preposition is considered as a “functional word, which was considered as “meaningless” compared to “content words” and hence “discarded” in the history of semantics. (Jackendoff 1973) Zelinsky-Wibbelt (1993) also says that preposition is a “category which had long been neglected in linguistic inquiry” (Zelinsky-Wibbelt 1993:1) After the study on *over* by Lakoff (1987) and Brugman (1984), prepositions came into the limelight, and ever since, a few numbers of studies on prepositions have been carried out.

This small amount of previous studies can be divided into three lines of thought, namely (1) a lexicological line of thought: to list all the meanings that a word has; (2) a semantic-network line of thought: to treat all the meanings as having a “family resemblance”; and (3) discourse line of thought: to admit the online interpretation of the word in question. We will look into the three lines of thought respectively.

**Lexicological Line of Previous Studies**

Most of the dictionaries as well as most of the textbooks used in Japanese English classes fall into this category.

This description is what we see in dictionaries. For example, Cobuild, analyzing their corpus Bank of English, lists 16 usages to *down* and 12 to *under*.

Not only dictionaries, but also, some previous papers in linguistics such as Ando (2015), Atkins and Rundell (2008) and Miller and Leacock (2000) can also be listed as a representative of this line of thought. In his book, Ando tries to show how the two words in question are used, listing their usages.

Also, almost all the English textbooks used in English classrooms in Japan adopts this line of thought in teaching the word’s meaning.
This line is useful in having the learner realize how the word in question is used. However, listing all the usages will force the EFL learners to “remember” the listed usages, which lays burden on the learners, hence not an effective way of teaching.

**Previous Studies that Deal with the Semantic Network of the Word in Question**

Lakoff and Brugman’s series of studies on *over* were pivotal in linguistics in many respects, for it shed light to the “discarded” once-thought-as “meaningless” words and argued that those words, too, have their own meanings. Another point, among others, that made their studies crucial in linguistics was that they introduced Wittgenstein’s theory of “family resemblance” to semantics. In opposition to the well-adopted theory of defining a category by necessary and sufficient conditions, Wittgenstein argues that a category is made up of a prototypical token and the other members of the category are connected to that prototype through “family resemblance”. Introducing this notion to semantics, Lakoff and Brugman argue that a word also has a “prototypical” meaning and other usages of the word are related to that prototype through resemblance, in other words, metaphor. They argue that Figure 1 is the “semantic network” of the meanings of *over*.

![Figure 1: Semantic Network of Over by Lakoff (1987)](image)

Following Lakoff and Brugman, many studies have been conducted on the semantics of prepositions using “semantic network” theory.

However, this approach to the semantics of preposition is not immune to criticism either. We can at least list the following four points as their shortcomings; 1) the way to decide the prototype is unclear; the prototype can either be decided by the frequency of occurrences of the usage, or what comes to people’s mind first, or by the first appearance in history. And sometimes, the prototype decided by those methods varies; 2) we can admit resemblance to any object in the world, hence we can never be assured of the validness of the attested semantic network; and 3) they do not pay attention to the “linguistic context” in which the word in question is used. For example, Brugman (1981, 1985) argues that *over’s* in *The plane flew over the city* and *Hang the painting over the fireplace* differ in that the former indicates a dynamic meaning, while the latter indicates a static meaning. However, we can argue that the dynamic meaning in the former sentence comes from the verb *fly* and the static meaning in the latter derives from the static meaning of the verb *hang*. Hence, there is more need to pay attention to the linguistic context; and 4) the network shows how the meanings are related but fails to
explain why the network expanded in that way, in other words, it does not function well in explaining why each meaning is included in that word. In terms of down, any semantic network is inadequate because they cannot explain why going down the road does not mean “going underneath” the road, and why shot the lion up / down does not simply mean that a lion goes through the movement of “going upwards / downwards”, the problem we have pointed out in Section 1.

**Discourse Studies on the Prepositions**

Tyler and Evans (2003) can be cited as one of the representatives of this line of thought. They argue that what they call the “proto-meaning”, i.e., core meaning, of under is in Figure 2 and down is as shown in Figure 3 below.

![Figure 2](image1.png)  ![Figure 3](image2.png)

They argue that under is in contrast with above, over, and below, and under denotes a static meaning which is underneath the LM (Landmark) in a reachable area. On the other hand, they continue to argue, that down does not show any movement but profiles the underpart of the body which is indicated in bold in Figure 3 and has an orientation indicated by the arrow. (note that for them this arrow does not mean movement, rather it shows orientation)

They also argue that other senses derive not because the word is polysemous but because the word only has the “proto-scene” meaning and this core meaning interacts with the “linguistic context”, i.e., other words in the sentence, to make the word seemingly polysemous. For example, they argue that, in opposition to Lakoff and Brugman, over only denotes a static meaning shown in Figure3, and the usage of movement of over in She lives over the bridge is derived because of the general knowledge that a human does not live in the space above the bridge, and the eye movement of scanning the path made by the bridge.

This idea of having one core meaning to each word seems to be convenient for the EFL learners when remembering the meanings of each word. However, more explanation is needed as to how the “linguistic context” plays a role in the semantic of the sentence, and, also, extracting one core meaning from the polysemous “meanings” sometimes end up as having a very broad abstract meaning.

**Findings**

We have found 30166 counts of down and 11754 counts of under in COCA and NOW. Table 1 is the list of the verbs that precede the words in question.
A look at Table 1 shows that *down* often cooccur with verbs that show motion, for example, *walk, run,* and *shut,* while *under* with those that show the static position, for example, *be, fall, operate,* and *live,* hence it seems reasonable to say that *down* shows the meaning of movement, while *under* a static meaning. In other words, *down* and *under,* at first glance, seem to be almost synonymous and only differ in the fact that the former depicts a dynamic movement of TR in relation to LM, while the latter indicates a static meaning of TR staying in one place, LM.

However, such a sheer observation will not be able to answer at least the following two points, namely 1) why is it that *down* and *under* both cooccur with the verbs *go* and *come? Go down* and *go under* both seem to indicate some movements; 2) this observation does not provide answers to the questions concerning the data (3) (4) and (5) pointed out Section 1.

Hence, in the following, we will clarify the differences between the two words in detail. Table 2 summarizes the differences between the two:

<table>
<thead>
<tr>
<th>Down</th>
<th>Under</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverb → prep</td>
<td>adverb rare</td>
</tr>
<tr>
<td>· verb <em>downed the opponent</em></td>
<td>other categories</td>
</tr>
<tr>
<td>· adj. <em>down escalator</em></td>
<td>· adj. <em>under jaw</em></td>
</tr>
</tbody>
</table>
| · n. *ups and downs* | special prep. protasis /since condition/ prefix shortage: *understate* below: *underline*
| from OE *descend from hill* | etymology from OE *close to* PDE |
| *come from* under the hall | prep + prep from under the bed (COCA) |
| NA Locative Inversion: *Down the falls flows the little brook* (Hayano 2014: 15) | prep sub. OK |
| *Under the bed is a favorite place for cats* (Iwaseki 2007: 114) | *Under the bed is where we used to hide the keys* (Huddleston + Pullum 2002: 64) |
| (but not completely) (Otani 2013) | antonym over (Benesse 2003) |

Table 2 Differences between *Down* and *Under*
In terms of grammatical category, *down* and *under* differ in that the former can be used either as an adverb, verb, adjective, and noun, while the latter is rarely used as such. In this respect, *down* is more grammaticalized than *under*, but *under* is used more in phrases such as *under such circumstance* or as a prefix to a set phrase than *down*. Both words can occur in preposition+preposition construction, but we can only use *under* in the prepositional subject construction as in *Under the bed is a favorite space*.

These differences do not seem to have any relation with the observation of *down* indicating a dynamic meaning while *under* a static meaning. Hence, we will analyze the data at hand more carefully to show the differences in semantics between the two.

**Discussions**

This section will closely analyze the data in hand to see the semantic differences between *down* and *under* and through the observation, tries to answer the second research question, i.e., whether prepositions denote only a static relationship between TR and LM or they show a dynamic relation between the two as well.

Table 2 shows that *down* and *under* differ mostly in three respects; 1) *down* functions not only as a preposition but also as other parts of speech; 2) *under* has more fixed phrases than *down*; and 3) only *under* can be used in a prepositional subject.

In order to see the two words in question, the following sections will investigate each word in comparison with their respective antonym.

**Semantics of Down in Comparison with Up**

Let us look into *down* and *up* in a minimal pair.

(7) a. look down
   b. look up

Looking at the minimal pair in (7), we are tempted to say that *down* indicates a movement downwards, and *up* means movement upward. However, (8) and (9) seem to suggest that that idea is not adequate;

(8) a. They shot the lion down
   b. They shot the lion up.

(9) a. He came down to me.
   b. He came up to me.

As we have seen before, (8b) does not necessarily mean that lions went through the movement of going upwards, nor in (9b) he comes up in position. On the contrary, in (9b) for example, he could be on the second floor and came "up" to me on the first floor! Speaking of *down*, it seems to involve a movement downwards, but we argue that it is the context that implies the downward action, and the word *down* only indicates a position that is lower in space after the action that is implied by the context, for *down* can be used not only with action verbs but also with stative verbs such as *be*.

A close look at the adverbial usages of *down* will make our points clear. (10) are the adverbial usages of *down* in OALD.

(10) Adverbial usages of *down* in OALD
   a. <towards / in lower place> the sun started to go down
   b. <to a low level> keep the noise down
   c. <in a weaker position> he was down with the flu
   d. <into writing> noted the numbers down carefully
   e. <money payment made initially> pay £ 5 down
   f. <American football> touch down

*Down’s* in (10a), (10d), (10e) and (10f) appear with action verbs but (10b) and (10c) are used with stative verbs. However, we know that in (10b), if we do not try, the norm for the noise is
up, hence we infer that they carry out some actions and try their best in keeping the noises down; in (10c), we know that his normal state is not-down, and he went through a change from normal to going down. In these examples, no actions are directly mentioned in the context, but we know that the state that is depicted by the prepositional phrase is the state after some changes happened, in other words, we calculate the what the sentence implies with the context or the knowledge we have about the world together with the semantic of the preposition, and down does not imply any action, but depicts the last state after some action or changes took place is lower in space.

Our argument can give an explanation to (3), i.e., the fact that down in (3) does not imply a movement of going underground, but implies going, say, south, or a peculiar down position that does not seem to show some movements downwards, such as those in (11).

(3) go down the street

(11) Peculiar Down’s in OALD
   a. <nearest to the sea> a dozen mile down the Thames
   b. <throughout> astrologers down the ages

If we say that down indicates a movement downwards, (3), (11a) and (11b) do not make any sense, but if we argue that the prepositional phrases including down show the last states after the action of mental scanning, the data (3), (11a) and (11b) are explained straightforwardly.

An observation of (12) strengthens our argument;

(12) Ups and downs (COCA)

(12) does not imply any action of going upwards / downwards, rather it shows that there are times when the economy or the mood is higher in position or lower in position, a static place rather than a movement.

With the above observation, we argue that down does not imply any action downwards, but it shows the last state after the action / changes happened. Hence, contextual information plays a great role in the senses of preposition and down does not imply any action, but rather depicts a static spatial relationship between the TR and LM.

Semantics of Under in Comparison with Over

As we have seen in the section 4, under is peculiar in comparison with down in that it is often used in fix phrases or in prepositional subjects such as (13) and (14), which require specific locational information.

(13) Under the bed is a favorite place for cats. (Iwasaki 2007:11)

(14) Under the bed is where we used to hide the keys. (Huddleston and Pullum 2002: 64)

In the literature on under, it is usually the case that under is described as showing a space lower. Figure 2 by Tyler and Evans (2003) and Figure 4 by Benesse are representatives of such explanation;
However, the space that is supposed to be indicated by *under* as shown in Figure 2 and 4 is too vague to be called specific. It is not certain if we are to describe a thing as *under* or *below* in Figure 4, and Figure 5 shows that anything under the LM can be located using *under*. Rather, we argue that *under* depicts a confined space that is secluded by a top and sides as shown in Figure 5;
Our argument seems more valid when we consider Figure 6.

In Figure 6, the ball at position A would not be described as a ball under the table, rather a ball below the table, while ball B would be explained as a ball under the table, in other words, under requires a top and the sides that make the confined space. This fact shows that under involves a controller, controlee, and power relationship between the two.

Arguing that under depicts a “confined” space involving a controller, controlee, and power relation between the two, can also explain the usages listed in OALD. (15) is the list of usages that OALD lists for the preposition under.

(15) Preposition Under in OALD
a. <directly below> under the North Sea
b. <lower level than> the room under his study
c. <lower than> under 18
d. <controlled> under his spell
e. <undergoing, in the state of> children under difficult circumstances

(15d) and (15e) imply that TR is under the power of LM, i.e., his spell in (15d) and burden that the children are going through in (15e). Under’s in (15a,b,c) may not seem to involve a controller at first sight, but when we compare those sentences with that with below, we can feel that there are some control involved.

(15a)’ below the North Sea
(15b)’ the room below his study
(15c)’ below 18

For example, if we compare (15b) with (15b)’, (15b)’ merely states the location of the room, while (15b) may imply that his study is a mysterious place that the room, too, has some influence by the study, for example, detectives may come to the room to investigate what is going on in the study.

Our argument of recognizing the controller / controlee/ power between the two can also explain the scarce usages of adverbial under.

(16) Adverbial Under in OALD
a. <directly below> weaving the body through crossbars, over and under
b. <under water> he was floating for some time but suddenly went under

(16a) hints that the subject is going thorough barriers or obstacles, i.e., control, and he is under the water pressure in (16b).

Also, our argument can explain why under is used in fixed phrases or preposition subject construction while down is not: fixed phrases or prepositional subject requires a specific location not a vague area, hence the containment meaning of under suits such constructions.

Form the above, we can be assured that under indicates a confined space involving a controller, controlee, and the power relation between the two.

Conclusion
This paper has set out aiming to discuss the following two research questions, namely.

(6) Research question of this paper
(a) What is the semantics of the prepositions down and under?
(b) Do prepositions denote only a static spatial relationship or do they denote not only a static but also a dynamic relationship between TR and LM?

Through analyzing the data found in COCA, NOW and other corpuses using the usage-based model, we have come to see that:

(17) A. _Down_ indicates not the movement of going downwards, but the prepositional phrase that starts with _down_ indicates the final state after the action / change is carried out is lower in space. And the prepositional phrase starting with _under_ indicates a confined space involving controller, controlee, and the power relationship between the two,

B. In the case of _down_ and _under_, a sheer observation of the two may argue that the difference between the two is that _down_ denotes a dynamic relationship while under a static relationship, however, the analysis of the data shows that they both indicate a static location in space.

References


Datasource
COCAL Corpus of Contemporary American English available at https://corpus.byu.edu/COCA/
NOW Corporus of News on the Web available at https://corpus.byu.edu/now/
OALD Oxford Andvanced Learners’ Dictionary Cobuild