AFTER AND ITS USES: A CORPUS-BASED STUDY

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ABSTRACT
This paper explored a less-studied preposition, after, and its uses in a corpus. The analysis included an inspection of dictionary senses, followed by the distributional patterns of parts-of-speech, the co-appearing verbs of after, the contextual uses of [-ly after] and [-ly after+NOUN], and finally a pre- and post-teaching investigating the effectiveness of using a corpus. The goal was to see what semantic information is embedded in after in each of these analyses and to explain the contextual uses of after that are not often realized. We used probes and corpus techniques to search for instances in the British National Corpus to retrieve expressions of after that appear in certain contexts. Based on the data, two conceptualizations of after, comprising the relations of two events, were postulated. For the uses of after and its two constructions [-ly after] and [-ly after+NOUN], we also tested their production by EFL students before and after a corpus workshop was introduced to EFL learners. The results showed that the workshop not only was effective, but also helped accelerate students’ speed of generating expressions of after. This paper could serve as a sample work for research on function words, and it also imposes pedagogical implications on the effectiveness of using a corpus for EFL learners.

Key Words: after, preposition, collocations, corpus

INTRODUCTION
Prepositions have been greatly studied. Many have shared the consensus that prepositions have polysemous meanings, i.e., several meanings being realized by one single lexicon. In the literature, there was extensive coverage of the terminology distinction between prepositions and particles; development of non-spatial meanings from spatial meanings; calculation of probability of a preposition filling a slot such as [* the
NOUN of], and many others. Terminology clarification includes distinguishing prepositions from participles, usually differentiating the two in different fixed phrases under the topics of phrasal verbs (e.g., run away, show up, grew up) (among many, Balwin, 2005; Hampe, 2002, et al.) or verb-particle constructions (brought back, send (someone) away) (Fraser, 1976; Bannard, 2005; Cook & Stevenson, 2006; Dikken, 1995).

As for the development from spatial to non-spatial meanings, studies of polysemy and literal-metaphorical senses (e.g., Boers, 1996; Boers & Demecheleer, 1998) of prepositions were identified. Within this broad scope, there were also studies which claimed that polysemy meanings of a word form a semantic network (mainly, Tyler & Evans, 2003), and the related meanings could be derived from single or multiple geometrical representations, while some scholars used image schemata to explain the polysemy of prepositions (Johnson, 1987; Lakoff, 1987).

In this study, we looked at the use of after for two reasons: First, the literature proved that after was not greatly discussed. Few studies have discussed after because its meanings were expected to be straightforward and they did not vary greatly, even in dictionary entries; second, after has a high connection with verbs (look after, go after) and that makes it less interesting to be seen as an individual preposition. It was more often listed under the heading ‘phrasal verb’. Yet, in a phrasal verb construction, after was also not greatly interesting because uses such as look after and go after dominate the instances, and this left little room for discussion.

Yet, our analysis of after in the corpus showed that after marks some important events. It serves some ‘timely’ function that exceeds our understanding of its uses. Hunston (2011), citing Hunston and Francis (1999), claimed that “words which regularly occur with similar co-texts […] tend to share aspects of meanings” (p. 119). It is the ‘aspects’ of meaning of after that we aimed to identify in this paper. We referred to it as the ‘contextual meaning’ of after. This contextual meaning is often not listed in dictionaries. We intended to see if EFL English major students knew about after and its constructions before and after they were equipped with corpus knowledge. The following research questions are postulated:

1. (a) What kinds of linguistic and contextual information are embedded in the preposition after?
   (b) How can the different uses of after in a corpus be presented using geometrical representations?
   (c) How effective is the use of corpus in assisting Taiwan EFL
students to know more about after and to generate different constructions of it?

In order to answer the above research questions, we looked into dictionary meanings and corpus collocation, as well as several significant constructions containing after. We also conducted pre- and post-tests to examine the effectiveness of using a corpus by EFL learners. In the following section, we first review previous studies on prepositions.

AFTER IN PAST LITERATURE

Prepositions are high frequency function words. Yet, studies on prepositions are very often focally known for certain meanings only, mostly the physical and spatial ones. Among the different prepositions, on, at, and in are some of the prepositions that have been greatly studied. Examples are the works by Fernando and Tricker’s (2000) and Wierzbicka’s (1993) study of at, in, and on; Vandeloise’s (1994) study on in; and Goddard’s (2002) study of on. Comparatively, some prepositions, one of which is after, were less studied. However, we emphasized in this paper that these prepositions deserve better attention because they carry equally important typological information. Tyler and Evans (2003) stated that after “derives from a comparative form of af, which was apparent in Old English and meant ‘off’ and ‘away’. Hence the comparative ‘af + ter’ meant ‘farther off’ or ‘farther away’” (p. 173). After is also a universal concept that exists in many cultures. Heine and Kuteva (2004) provided at least four grammaticalization paths for after – (a) BACK (body part) > AFTER (p. 46); (b) BEHIND (SPATIAL) > AFTER (pg. 52); (c) NEAR (‘near’, ‘close to’) > AFTER (p. 214); and (d) PASS (‘to pass by'/ ‘pass through’) > AFTER (p. 228). Using examples from different languages, Heine and Kuteva observed that one or more languages in the world shared a similar development. As an important shared concept, the preposition of after deserves careful scrutiny and in-depth exploration.

The following are some mentions of after, especially in comparison to its related prepositions such as behind and before. Tyler and Evans (2003) was the only work that devoted a sub-section to discuss after. For its meanings, after is defined with a “notion of sequence”: “The functional element associated with after is that of following or pursuit.” (Tyler & Evans, 2003, p. 156). In addition to the sequence meaning,
Tyler and Evans also said that after “has developed a goal sense, as in Lou went after some ice-cream” (p. 156). Even in Lindstromberg’s (1998) book English Prepositions Explained, after was not discussed in detail. Some scattered information is gathered below. First, AFTER is a converse of BEFORE: “BEFORE is somewhat akin to IN FRONT OF, but is almost always used to refer to chronological sequence (as the converse of AFTER)” (p.106). Second, in another mention, it said “[BEFORE (and/or AFTER) will be used to speak of the order of events,” as in “14 horses crossed the finish line before Mr. (not so) Hot [did]” (p. 107). Lindstromberg’s (1998) definition of ‘event’ was explained with examples (p. 8). In one of the examples, The bomb went off near a guest house, they explained that “what is near the Landmark (‘a guest house’) is not ‘the bomb’ or ‘went off’, but overall event ‘the bomb went off[’]” (p. 8). Therefore, the bomb went off as an event is happening near a guest house.

Third, the end of the book listed a function of imitation for after with a short explanation and a couple of examples of after: “Imitation is often spoken of as if it were following, e.g., follow in sb’s footsteps.” The two examples are “The girl...models herself after her academic mother” and “My daughter takes after her father” (p. 256).1 Not much discussion was given on this in the rest of the book.

From the above we again proved that after did not evoke as much interest as the other prepositions did in the literature. In what follows, we first discuss some of the cognitive approaches to studies of prepositions.

Cognitive Approaches to Studies on Prepositions

One of the important directions on prepositions are the works by Tyler and Evans (2003) and Lindstromberg (1998) which reviewed groups and individual prepositions and discussed the core meaning or primary sense of each. Tyler and Evans called the core meanings ‘proto-scene’, while Lindstromberg focused more on the prototypical meanings and the metaphorical meanings of the prepositions. Literal

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1 Vendler (1957/1967) distinguished event types (states, activities, achievements, and accomplishments) according to the verb classification, taking into consideration the temporal and aspectual information denoted by the verbs and other properties that the verbs carry. (Detailed linguistic distinctions of event types will not be given here. For more on this topic, see Dowty (1979), Mourelatos (1978), or an overview in Rothstein (2008)).
meanings of a preposition refer to the locative meaning describing the 
physical items in space, while metaphorical meanings refer to those 
describing non-spatial concepts (Tyler, Mueller, & Vu, 2011). Tyler and 
Evans used semantic networks that assume polysemy senses could be 
related to the proto-scene. They further claimed that the proto-scene 
“involves not only a conceptual spatial relation between a TR [trajector, 
or the moving entity] and LM [landmark, or the reference point] (at least 
one of which is oriented) but also a functional element” (p. 134). The 
‘functional element’ explains how different meanings, which are 
“grounded in the nature of our interaction with spatial scenes, give rise to 
non-spatial meanings […] enriching the semantic network” of a 
particular preposition.2

Although trajectory (TR) and landmark (LM), briefly defined above, 
are commonly seen in many works, it is important to recognize the work 
of Langacker (1987, 1986) or Talmy’s ‘figure’-‘ground’ concept (1978, 
1983) who used these concepts to explain not only prepositions but also 
cognitive grammar. Here, we briefly introduce Langacker’s TR and LM. 
Langacker (2010) stated that trajector and landmark are “characterized 
respectively as primary and secondary figures within a profiled 
relationship” (p. 182). A trajector is a moving entity while landmark is 
where this entity moves to or locates. Landmark thus acts as a reference 
point for the trajector; it can be a surface, a container, etc. that serves as 
the background. Langacker (1986) used trajectory and landmark to explain 
the meaning of a verb sense. For example, for the go sense, Langacker 
said that “[w]ith the passage of time, one individual, referred to here as 
the “trajectory” (tr) moves from a position within the neighborhood of 
another individual, the “landmark” (lm), to a final position outside that 
neighborhood” (p. 7). This explained how a person moves away from 
another person to go to a different place not in the scope of the second 
person. This view of cognitive grammar is related closely to the 
development of Johnson’s (1987) and Lakoff’s (1987) image schema, as 
the TR, LM, and path can be represented using geometrical 
figures.

Johnson (1987) defined ‘image schemata’ (the plural form of ‘image 
schema’) as “gestalt structures, consisting of parts standing in relations 
and organized into unified wholes, by means of which our experience 
manifests discernible order” (xix). These schemata “function primarily 
as abstract structures of images” and one understands these schemata

2 Tyler and Evans (2003) called them ‘particles’ in this part.
through bodily experience. The spatial constructs provided by Johnson (1987) are such as CONTAINER, PATH, PART-WHOLE, POINT, SURFACE, etc., from which both physical and abstract concepts are projected. In every image schema, there is a schematic pattern with an internal structure. For example, in the PATH schema, Johnson claimed that it involves a starting point, an end-point, and a sequence of locations that link the starting point to the end-point. When one begins at the starting point and arrives at the end-point, one would pass through these locations that connect these points. Expressions with the preposition to correspond to this PATH schema, as in Your brother drives his car to the hospital fast. In this sentence, your brother does the motion of driving from a starting point to reach the goal of this path, or the end-point, the hospital. These internal structures can be conceptualizations because one “can perform mental operations on image schemata that are analogs of spatial operations” (Johnson, 1987, p. 25).

As for the image schema theory, it has been greatly adopted in research on prepositions. Examples of studies that adopted this model are such as the work on over by Brugman (1981) and Lindner’s (1983) classic analysis of out and up. The image schema theory allows one or more senses to be derived from a basic image schema. Sometimes, more than one preposition can be derived from a single image schema. Sometimes, different schemata are also related in a network. For instance, the covering sense of over was discussed in Lakoff (1987, p. 428). In one of the uses of over (he has freckles over most of his body), the covering has a ‘multiplex’ and ‘mass’ relation – whether to see the freckles as individual ‘multiplex entities’ when viewed close-up or as the mass when seen from far above. This same schema was used by Chung (2004) to explain the uses of dalam in Malay (‘in’ or ‘among’) when one sees the multiplex entities as physical groups of entities or abstract image schemata from which individuals could still be identified. In this paper, we also made use of this concept when we interpreted the meanings of after using geometrical representation.

Despite the existence of many references that showed the possibility of identifying a core concept of a preposition, it might not be a practical step for EFL learners. It takes more strength to establish the relation between the different meanings for highly frequent words such as prepositions. Furthermore, there might be far more meaning entries for a single preposition that require deeper processing by EFL learners. The learners oftentimes refer to dictionaries for the explanation of meanings.
of lexical words. Yet, for prepositions, it is not a convention that learners would refer to a dictionary for meanings. One reason for this is because the dictionary meanings could be a long list (cf. \textit{in} in the \textit{Merriam-Webster Learner's Dictionary} returned seventeen senses; \textit{on} has twenty-three senses). Using \textit{on} as an example, Lindstromberg (2001) examined how \textit{on} is presented in five advanced learner’s monolingual dictionaries. The author observed the following problems: “(1) sense information is sometimes vague or misleading; (2) sense information is often mismatched to examples; (3) coverage of similar uses is often dispersed throughout an entry; and (4) paradigmatic semantic contrasts are ignored” (p. 79). Although dictionaries are written with a target audience, they often do not contain all the information required for a complete understanding of a word. From the above and the other studies focusing on the meaning and semantic structure of prepositions (cf. Kaufmann, 1993; Kristoffersen, 2001; Lindstromberg, 1998; Sandra & Rice, 1995; Schulze, 1993), the difficulty of interpreting the senses is obvious and thus different perspectives are required to stimulate the understanding of the various senses of prepositions.

The second reason why identifying a core concept might not work for learners is because learners are more accustomed to memorizing expressions containing prepositions rather than remembering the senses or even core meanings of a preposition. In this paper, we showed that by the use of a corpus and conceptual representations of \textit{after}, a better understanding of \textit{after} could be obtained. We also posited that \textit{after} and its construction contain contextual uses that are oftentimes unrealized by most users, let alone EFL learners who lack a comprehensive method to observe linguistic data.

In this paper, the discussion covered (a) an analysis of \textit{after} and its constructions in the corpus; (b) an analysis of the contextual uses of \textit{after}; (c) the meaning representations of \textit{after}; and (d) a comparison of pre- and post-tests to show how students could retrieve information about \textit{after} if they knew how to use a corpus. We used both a quantitative method and qualitative analysis to look at the contextual uses of \textit{after}. We first used corpus data to retrieve the frequency of \textit{after} and its constructions; we then analyzed the possible meaning of the constructions. In the final section, we showed in a corpus workshop the
difference between the performances of students in pre- and post-tests. The tests showed how a corpus could assist in retrieving expressions containing after after the corpus workshop.

METHODOLOGY AND RESULTS

This study utilized methodology that started from a single word and extended to pattern analyses. This section first examined the senses of after from dictionaries to see how this preposition is defined. We then inspected the parts-of-speech distributions and its collocations. As a preposition, after has three senses in the Merriam-Webster Online Dictionary, shown in (2) below.4

(2) Sense 1: a: behind in place <people lined up one after another>
   b (1): subsequent to in time or order <20 minutes after 6>
   b (2): subsequent to and in view of <after all our advice>
Sense 2: —used as a function word to indicate the object of a stated or implied action <go after gold> <was asking after you>
Sense 3: so as to resemble: as
   a: in accordance with
   b: with the name of or a name derived from that of <named after his father>
   c: in the characteristic manner of: in imitation of <writing after the manner of Hemingway>

This dictionary lists the ‘behind’ meaning in sense 1a; the ‘time or order’ meaning in sense 1b(1); and an extension of the ‘order’ sense in 1b(2). Sense 2 is vague because after is termed as a ‘function word’ following the verb. Sense 3 provides the semantics of some constructional combinations such as named after and write after. In a learner’s version, the Merriam-Webster Learner’s Dictionary, the meanings of after are more extensively covered:5 after is defined as ‘time order’ in sense 1; as ‘order of things or person’ in sense 3; and as ‘an order of some events’ in sense 2. Like most dictionaries which aim to provide the most frequently seen language patterns to their users, these two dictionaries list a selective, usually frequent combinations of words with after as separate senses. Senses 4 to 8 refer particularly to certain combinations of words

5 http://www.learnersdictionary.com/definition/after
with *after* such as *go after/BE after* (sense 4), *call after/clean after* (sense 5), *name after/pattern after* (sense 6), *put something after* something (sense 7) and *ask after/inquire after* (sense 8).6

In order to see the parts-of-speech (POS) distributions of *after* in a corpus, the British National Corpus was consulted through the BNCWeb platform (Hoffman et al., 2008). The results are shown in Table 1 below. When two tags were given (e.g., PRP-CJS), a word was ambiguous between these two tags but the first one was most probable. Thus, PRP-CJS which means a preposition or a conjunction is different from CJS-PRP because the one with the stronger possibility will be placed in front.7 We presented the results verbatim from the corpus.

Table 1

*After and its Parts-of-Speech in the British National Corpus (BNC)*

<table>
<thead>
<tr>
<th>POS</th>
<th>Instances</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepositions (PRP)</td>
<td>73,014</td>
<td>64.20%</td>
</tr>
<tr>
<td>Either Prepositions or Conjunctions (PRP-CJS)</td>
<td>16,986</td>
<td>14.94%</td>
</tr>
<tr>
<td>Conjunctions (CJS)</td>
<td>16,303</td>
<td>14.33%</td>
</tr>
<tr>
<td>Either Conjunctions or Prepositions (CJS-PRP)</td>
<td>6,351</td>
<td>5.58%</td>
</tr>
<tr>
<td>Adverbs (AV0)</td>
<td>936</td>
<td>0.82%</td>
</tr>
<tr>
<td>Adjectives (AJ0)</td>
<td>126</td>
<td>0.11%</td>
</tr>
<tr>
<td>Truncated speeches (UNC)</td>
<td>13</td>
<td>0.01%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>113,729</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

From Table 1, we can see that *after* as a general preposition constitutes the majority of the instances (64.20%, with another 14.94% from PRP-CJS). *After* as a conjunction constitutes 14.33% (and another 5.58% of CJS-PRP) of the total 113,729 instances. *After* as an adverb or adjective each constitutes less than 1% of the total instances. The final

6 Most dictionaries list *look after* under *look*, depending on the degree of idiomaticity, an issue already mentioned in the introduction of this work.

7 Preposition-Conjunction: *Usually after one or two turns these gliders will unstall themselves and build up speed rapidly in a spiralling dive.* (A0H 875)

Conjunction-Preposition: *It was a rather rickety affair that creaked embarrassingly when I sat down in it and ever after when I moved.* (A0F 859)
category is truncated speeches in the spoken part of the BNC.

(3) (a) Preposition
   *Isidro Caballero, a 33-year-old teacher, ‘disappeared’ after being
detained on 7 February 1989 by an army patrol.* (A03 394)

(b) Conjunction
   *They took what was left after the church schools had creamed off
the more academic pupils and the upper classes.* (A07 1353)

(c) Adverb
   *He refused to say whether seven or eight voting slips had been
handed to him, and said they were all destroyed soon after.*
(AHA 51)

(d) Adjective
   *Festivals aren’t only about fishing, most feature an after match
disco and for the less energetic there’s pool, darts competitions
and singalongs in the local bar.* (A6R 652)

(e) Truncated Speech
   …to give a real round of applause to these beautiful British
people have come, have come out this after-- this after-- th-- this
afternoon. (K66 2)

The results in Table 1 showed that *after* as a preposition dominates the
overall instances of *after*, followed by conjunctions. Adverbs and
adjectives of *after* are not so frequent.\(^8\)

In the next analysis, we extracted all the verbs that appear on the left
five positions of *after* (thus, minus five positions of *after*). By doing so,
we ignored any preposing constructions such as *Up it rises* and *Up the
tree it raises* (cf. Cappelle, 2002) in which the preposition is moved
before the subject or object.

Through using the designated parameter, the top twenty verbs,
arranged in descending T-score values (the last column of Table 2), are
displayed. A T-score was used instead of the commonly used Mutual
Information (MI) value because we intended to measure the certainty of
collocation, not the strength of the collocations (Hunston, 2002). An
MI-score “measures the amount of non-randomness present when two
words co-occur” (p. 71), or the association between A and B words: if an
A word occurs, the possibility of a B word also occurs. Thus, an

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\(^8\) It is worth noting that the BNC tags do not distinguish between a phrasal
verb and a prepositional verb. The adverbs are not necessarily phrasal verbs.
MI-score could be extremely high for an A word that occurs once or twice, but every time A occurs, B also occurs. This strength of association is more suitable for the measurement of association between lexical words. A T-score, on the other hand, is a normalized score that takes into account “the amount of evidence” collected and is a more suitable score for measurement of the overall performance of a word, reducing a high score for low frequency collocations (p. 72). It is thus a more suitable score for function words.

The third column of Table 2 shows the total frequency of each individual verb; the fourth column shows the collocated frequencies, and the fifth column shows the number of texts in which each collocated pattern was found.

Table 2

*The Verbs Appearing in the -5 Window Span of After*

<table>
<thead>
<tr>
<th>No.</th>
<th>Word</th>
<th>Total No. in whole BNC</th>
<th>Observed collocate frequency</th>
<th>In No. of texts</th>
<th>T-score value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>look</td>
<td>41,524</td>
<td>2355</td>
<td>1084</td>
<td>44.1879</td>
</tr>
<tr>
<td>2</td>
<td>looking</td>
<td>25,130</td>
<td>1146</td>
<td>674</td>
<td>30.0871</td>
</tr>
<tr>
<td>3</td>
<td>looked</td>
<td>32,194</td>
<td>951</td>
<td>601</td>
<td>25.5427</td>
</tr>
<tr>
<td>4</td>
<td>was</td>
<td>881,425</td>
<td>6508</td>
<td>1888</td>
<td>25.2494</td>
</tr>
<tr>
<td>5</td>
<td>named</td>
<td>4,272</td>
<td>649</td>
<td>417</td>
<td>24.6249</td>
</tr>
<tr>
<td>6</td>
<td>died</td>
<td>13,585</td>
<td>670</td>
<td>346</td>
<td>23.2221</td>
</tr>
<tr>
<td>7</td>
<td>came</td>
<td>44,701</td>
<td>901</td>
<td>585</td>
<td>22.4626</td>
</tr>
<tr>
<td>8</td>
<td>left</td>
<td>31,981</td>
<td>612</td>
<td>459</td>
<td>18.1811</td>
</tr>
<tr>
<td>9</td>
<td>returned</td>
<td>9,818</td>
<td>303</td>
<td>249</td>
<td>14.5458</td>
</tr>
<tr>
<td>10</td>
<td>were</td>
<td>313,113</td>
<td>2249</td>
<td>1079</td>
<td>13.9322</td>
</tr>
<tr>
<td>11</td>
<td>arrested</td>
<td>3,380</td>
<td>203</td>
<td>115</td>
<td>13.0444</td>
</tr>
<tr>
<td>12</td>
<td>went</td>
<td>45,738</td>
<td>520</td>
<td>386</td>
<td>12.6293</td>
</tr>
<tr>
<td>13</td>
<td>looks</td>
<td>9,947</td>
<td>237</td>
<td>198</td>
<td>12.1173</td>
</tr>
<tr>
<td>14</td>
<td>return</td>
<td>7,533</td>
<td>201</td>
<td>165</td>
<td>11.4822</td>
</tr>
<tr>
<td>15</td>
<td>released</td>
<td>4,934</td>
<td>177</td>
<td>118</td>
<td>11.4229</td>
</tr>
<tr>
<td>16</td>
<td>comes</td>
<td>15,662</td>
<td>257</td>
<td>192</td>
<td>11.0755</td>
</tr>
<tr>
<td>17</td>
<td>resigned</td>
<td>2,014</td>
<td>141</td>
<td>92</td>
<td>11.014</td>
</tr>
<tr>
<td>18</td>
<td>called</td>
<td>32,288</td>
<td>374</td>
<td>301</td>
<td>10.8701</td>
</tr>
<tr>
<td>19</td>
<td>sought</td>
<td>5,182</td>
<td>166</td>
<td>134</td>
<td>10.8439</td>
</tr>
<tr>
<td>20</td>
<td>retired</td>
<td>1,809</td>
<td>133</td>
<td>96</td>
<td>10.7369</td>
</tr>
</tbody>
</table>
From Table 2, *look after* (in different grammatical forms) seems to be the most frequently appearing collocation. The following content words (thus ignoring *was* as in *She was after everything in trousers* (AOD 1504)) are *named after* (#5), *died after* (#6), *came after* (#7), *left after* (#8) and so on. By going through the list, we realized that *after* in many combinations (e.g., *died after*, *left after*, etc.) denotes a literal temporal sequence rather than that of the more figurative ones such as *look after* and *named after*, in which *after* in the latter two examples identifies an extended ‘sequence’ meaning.

Apart from this, the results in Table 2 explain our observation of senses in the dictionaries—*look after* is listed separately under *look* in dictionaries because of its high idiomaticity. Other uses of *after*, especially those in terms of time and order (*named after*, *died after*, *came after*, *arrested after*, etc.), were also found among our top twenty collocates.

### CONTEXTUAL FUNCTIONS OF *AFTER*

In this section, we analyzed the contextual use of *after* that was not immediately realized as part of its meanings. We found that *after* is often used to point out a time whereby something happened or changed dramatically. When we searched for [*ly_AV0 after*] in the BNCWeb, we found the results in Table 3. The top twenty types are listed. In total, there are 3,318 (2.92%) such instances from a total of 113,729 instances of *after*. Among the list, *only after* was not in our expectations because we intended to find adverbs that end with the suffix *–ly*. However, we kept it because its co-occurrence is strong.

Table 3

<table>
<thead>
<tr>
<th>No.</th>
<th>Lexical items</th>
<th>No. of occurrences</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>shortly after</td>
<td>1210</td>
<td>31.60%</td>
</tr>
<tr>
<td>2</td>
<td>immediately after</td>
<td>781</td>
<td>20.40%</td>
</tr>
<tr>
<td>3</td>
<td>only after</td>
<td>720</td>
<td>18.80%</td>
</tr>
<tr>
<td>4</td>
<td>especially after</td>
<td>210</td>
<td>5.48%</td>
</tr>
<tr>
<td>5</td>
<td>particularly after</td>
<td>108</td>
<td>2.82%</td>
</tr>
<tr>
<td>6</td>
<td>quickly after</td>
<td>42</td>
<td>1.10%</td>
</tr>
</tbody>
</table>
Table 3 (Continued)

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>usually after</td>
<td>37</td>
<td>0.97%</td>
</tr>
<tr>
<td>8</td>
<td>directly after</td>
<td>36</td>
<td>0.94%</td>
</tr>
<tr>
<td>9</td>
<td>rapidly after</td>
<td>34</td>
<td>0.89%</td>
</tr>
<tr>
<td>10</td>
<td>sharply after</td>
<td>17</td>
<td>0.44%</td>
</tr>
<tr>
<td>11</td>
<td>apparently after</td>
<td>16</td>
<td>0.42%</td>
</tr>
<tr>
<td>12</td>
<td>probably after</td>
<td>16</td>
<td>0.42%</td>
</tr>
<tr>
<td>13</td>
<td>really after</td>
<td>16</td>
<td>0.42%</td>
</tr>
<tr>
<td>14</td>
<td>certainly after</td>
<td>15</td>
<td>0.39%</td>
</tr>
<tr>
<td>15</td>
<td>considerably after</td>
<td>13</td>
<td>0.34%</td>
</tr>
<tr>
<td>16</td>
<td>dramatically after</td>
<td>11</td>
<td>0.29%</td>
</tr>
<tr>
<td>17</td>
<td>finally after</td>
<td>9</td>
<td>0.24%</td>
</tr>
<tr>
<td>18</td>
<td>possibly after</td>
<td>9</td>
<td>0.24%</td>
</tr>
<tr>
<td>19</td>
<td>significantly after</td>
<td>9</td>
<td>0.24%</td>
</tr>
<tr>
<td>20</td>
<td>slightly after</td>
<td>9</td>
<td>0.24%</td>
</tr>
</tbody>
</table>

From Table 3, we can see that shortly after (31.60%) appears on top, followed by immediately after (20.40%). From here, some meanings of [-ly after] construction can be derived: (a) the top two dominating collocated patterns emphasize the swiftness of the follow-up event or action. Other uses with the similar meanings are quickly after, rapidly after, sharply after, and dramatically after; (b) some (especially after, particularly after) indicate manner or preciseness, whereas (c) others (probably after, possibly after, and presumably after) indicate prediction of a sequence of events. Examples like directly after and significantly after can be ambiguous in terms of being swiftness or to indicate manner.

In Figure 1 below, we show the conceptualization of [*ly_AV0 after]. We supposed after uses an event (Event 1) to mark the reference point after which something else (Event 2) happens. Event 2 may appear immediately after Event 1 or at a later time (see dotted Event 2) depending on the type of adverbs that appear before after.
In the examples that follow, we show how after is used.

(4) *He was arrested shortly after his arrival and was detained without trial until September when he was sentenced to ten years’ hard labour for alleged espionage.* (A03 667)

In (4), Event 1 will be ‘his arrival’ and Event 2 will be ‘his arrest’. Event 2 happens quickly after Event 1.

(5) *Many of the residents moved out shortly after Mrs Hill announced her intention to sell, and in fact there were only four of us left when the new landlord took possession.* (A0F 1030)

In (5), Event 1 is ‘Mrs. Hill’s announcement’ and Event 2 is ‘the moving out of the residents’. Event 1 and Event 2 do not necessarily occur in a short while although *shortly after* is used in (5), as compared to (4). The reason we knew it was not immediately happening in seconds or minutes is because moving house requires time and readers knew that. The use of *shortly after* in (5) therefore is to intensify the significance of the announcement to the moving, rather than to focus on the time between the announcement and the moving. In contrast to (5), readers knew that (6a) happens in a short while because ‘going to bed’ and ‘having dinner’ are events that could happen under the same roof and could be carried out with less effort than ‘moving out.’ In (6b), the two events should occur even faster after one after another because of the ‘breaking of the

Figure 1. Conceptualization of [*ly_AV0 after]*

Varied Swiftness of Events
AFTER AND ITS CORPUS USES

egg’ and its ‘consumption’ need to be done in an understandably short period of time. These, however, are not embedded in the meaning of after or the construction [^ly_AVO after]. Readers knew these based on world knowledge or the contextual understanding of the words in the ‘neighborhood’ of after.

(6) (a) Sara went to bed immediately after dinner. (A0R 2189)
(b) The egg industry, in the form of United Kingdom Egg Producers’ Association (Ukepra), has submitted a definitive proof to the Richmond Committee, under the umbrella of the Secretary of State for Health, Kenneth Clarke, saying intact eggs, consumed immediately after breaking, cannot cause food poisoning. (A50 80)

Therefore, what kinds of meanings are embedded in after? After tells the order of a series of at least two events. The way and the swiftness and manner of how the two events take place depend on the information carried by the adverbs or the context in which these two events are realized.

As the two events are often related, after can sometimes be used to state a pre-condition that has been met before something else could be carried out when used with only, such that in (7a) below. But it could also mean a cause-and-effect sequence, as in (7b). Sometimes, it could both, as in (7c).9

(7) (a) Only after the social formation had been constructed could the evaluation of the role of institutions and values be undertaken in terms of the place of these consciously-realized phenomena in its working. (A6S 307)
(b) It was only after he took two bullets in the thigh and wrist and a shotgun blast in the back, and his brother was murdered by rival gangs that he channelled his aggression into baseball. (A5U 98)
(c) It was only after the reasonable harvest of 1922 that the spectre of nation-wide starvation receded. (A64 1042)

In order to further understand the types of nouns that collocate with the [^ly after] construction, the most frequently collocated nouns following this construction were also examined.

9 Despite the interesting observation, only after should be treated with caution as the combination of only and after might form a connective itself and will require in-depth discussion. The current paper will not deal with this part as it exceeds the current scope of our work.
From the list of nouns in Table 4, we can see that most of the events denoted by *after* are either bounded events with a beginning and an ending (e.g., war, election, period, meeting, appointment, event, etc.) or inchoative events with a distinctive change of states (birth, arrival, take-off, revolution, etc.). Bounded events can commonly refer to “a situation [that] may be limited in time: for instance, a situation of sunbathing may last for half an hour; it reaches a temporal boundary once the person in question leaves the beach.” (see Depraetere, 1995, p. 2 for a variety of (un)boundedness). Inchoative events contain verbs that express “a change of state” or the change of the original state to a newer status: “Inchoative verbs are generally intransitive” (e.g., *The stick broke* and *The snowman melted.*) (Haspelmath, 1993, p. 90).

Table 4

*Nouns Following [-ly After] Constructions in +3 Window Span*

<table>
<thead>
<tr>
<th>No.</th>
<th>Word</th>
<th>Total No. in whole BNC</th>
<th>Observed collocate frequency</th>
<th>In No. of texts</th>
<th>T-score value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>war</td>
<td>27,205</td>
<td>79</td>
<td>72</td>
<td>8.5814</td>
</tr>
<tr>
<td>2</td>
<td>death</td>
<td>19,856</td>
<td>73</td>
<td>62</td>
<td>8.3111</td>
</tr>
<tr>
<td>3</td>
<td>birth</td>
<td>5,115</td>
<td>45</td>
<td>41</td>
<td>6.6318</td>
</tr>
<tr>
<td>4</td>
<td>world (war)</td>
<td>57,446</td>
<td>52</td>
<td>47</td>
<td>6.4126</td>
</tr>
<tr>
<td>5</td>
<td>election</td>
<td>9,662</td>
<td>38</td>
<td>34</td>
<td>6.0073</td>
</tr>
<tr>
<td>6</td>
<td>midnight</td>
<td>1,792</td>
<td>29</td>
<td>24</td>
<td>5.3518</td>
</tr>
<tr>
<td>7</td>
<td>years</td>
<td>88,571</td>
<td>43</td>
<td>41</td>
<td>5.2035</td>
</tr>
<tr>
<td>8</td>
<td>arrival</td>
<td>3,339</td>
<td>25</td>
<td>23</td>
<td>4.9331</td>
</tr>
<tr>
<td>9</td>
<td>return</td>
<td>9,522</td>
<td>23</td>
<td>21</td>
<td>4.5968</td>
</tr>
<tr>
<td>10</td>
<td>end</td>
<td>42,947</td>
<td>28</td>
<td>23</td>
<td>4.4779</td>
</tr>
<tr>
<td>11</td>
<td>period</td>
<td>24,108</td>
<td>24</td>
<td>24</td>
<td>4.4057</td>
</tr>
<tr>
<td>12</td>
<td>meeting</td>
<td>15,931</td>
<td>18</td>
<td>16</td>
<td>3.8662</td>
</tr>
<tr>
<td>13</td>
<td>appointment</td>
<td>4,382</td>
<td>15</td>
<td>15</td>
<td>3.7596</td>
</tr>
<tr>
<td>14</td>
<td>lunch</td>
<td>4,873</td>
<td>14</td>
<td>13</td>
<td>3.6111</td>
</tr>
<tr>
<td>15</td>
<td>take-off</td>
<td>337</td>
<td>13</td>
<td>10</td>
<td>3.5962</td>
</tr>
<tr>
<td>16</td>
<td>birthday</td>
<td>3,165</td>
<td>13</td>
<td>13</td>
<td>3.5176</td>
</tr>
<tr>
<td>17</td>
<td>christmas</td>
<td>8,603</td>
<td>14</td>
<td>13</td>
<td>3.5112</td>
</tr>
<tr>
<td>18</td>
<td>publication</td>
<td>3,695</td>
<td>13</td>
<td>11</td>
<td>3.5028</td>
</tr>
<tr>
<td>19</td>
<td>event</td>
<td>10,296</td>
<td>14</td>
<td>14</td>
<td>3.4658</td>
</tr>
<tr>
<td>20</td>
<td>revolution</td>
<td>4,554</td>
<td>12</td>
<td>11</td>
<td>3.3323</td>
</tr>
</tbody>
</table>
It was found that war and death are the top two highly collocated nouns with after, both of which have almost similar T-score values, and they appear in more than 60 texts collected in the BNC. Among all the 79 instances of [-ly after + war] construction, about 50% are constituted by immediately after, and another 23% by shortly after. As for [-ly after + death], among the 73 instances, 38.36% are shortly after; 23.29% are immediately after; and 21.92% are only after. Therefore, it appears that in the corpus, these two events are the most prominent events after which significant changes had been noted.

(8) (a) In the period during and immediately after the war feminists were confronted by this changing situation across a whole range of sexual issues: venereal disease, birth-control and, crucially for our argument, sex education. (G0D 1803)

(b) Like all the children born shortly after the Great War, we knew that to our parents, the war was the great divide. (B1Y 129)

(c) Registration has to be done very shortly after the death itself, so the person who goes to the office to do this finds himself alongside people who are celebrating the birth of a baby, or registering a marriage. (ADE 1004)

In all the examples above, the significance of Event 1 has been focally narrowed down to the reference point, or to its finishing point, rather than to the whole event itself. What happens in Event 1 is not the main concern of the uses of after; the focus is on what happens after it, i.e., Event 2. The impact of Event 1 on Event 2 is amplified due to the significance of death and war. In some examples such as (9), Event 1 is as short as the reference point itself.

(9) (a) Almost immediately after birth he was sent out to a wet-nurse at the nearby village of Syderstone, where he remained until he was weaned, at about 18 months. (EEK 277)

(b) One of the first two women, who left shortly after midnight on Sunday, was identified as Victorine Hollingsworth, 59, a British citizen. (K5M 8962)
In these examples, death, birth and midnight are all punctual events (cf. Beavers, 2008; Dowty, 1979). Beavers (2008) defined that “[p]unctual events are composed of two subevents, a beginning and an end” (p.248). These events are the reference points themselves, i.e., their Event 1 is almost non-existent and could be seen as the reference point. The focus is still on the events that happen after it.

**PEDAGOGICAL IMPLICATIONS**

In order to observe how a corpus can assist learners in learning a linguistic point, we conducted a classroom pre-teaching and post-teaching task (appendix) based on our corpus findings on the preposition after. The aim of the task was to see if EFL students responded faster with the use of a corpus, compared to an intuitive or a dictionary-based method of answering questions.

The class consisted of 35 English major freshman students in a general linguistics course in a northern university in Taiwan. Before the introduction of the corpus, the pre-test (appendix) was distributed. Students were told they could look for the expressions in dictionaries if they wanted to.

Among the 35 students, seven students were removed because they only answered one of the pre- or post- tests due to lateness or incomplete answers. The number of students left for analysis was 28. The last question was an open-ended question that asked if students found the exercise easy
or difficult. A majority of the students wrote ‘difficult’ in the pre-test.

After about 20 minutes, before the teaching started, the pre-tests were collected. The teaching involved a two-and-a-half hour corpus hands-on workshop. All the skills needed to retrieve the data of the pre-teaching exercise were taught. In the workshop, the experimenter used different keywords (e.g., good_N*, good_AJ0, etc.) to introduce the corpus functions. Only the collocation section used the same keyword after.

After the workshop, students were given about 20 minutes to complete the post-test, which looked exactly the same as the pre-test except for the last question which asked: “Do you now find it easier to provide the answers? Why?” For this question, almost all the students agreed that the corpus provides a faster and easier way to answer all the questions in the test.

Parts-of-speech

For generating sentences (question 1; see appendix) that contain after based on parts-of-speech ‘preposition’, ‘conjunction’, ‘adverb’, and ‘adjective’, most students did not answer this part correctly in either test. This is probably due to the misunderstanding of this question or missing information in the instruction. Most students wrote a list of possible prepositions (on, at), conjunctions (and, or), adverbs (beautifully, quickly), and adjectives (fast, fat) in both tests. For this part, we only discussed the students who answered them correctly.

Two observations were found on this part: First, the number of students who answered the questions correctly improved in the post-test. The number of students is given in Table 5.

Table 5

<table>
<thead>
<tr>
<th></th>
<th>Preposition</th>
<th>Conjunction</th>
<th>Adverb</th>
<th>Adjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-teaching</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Post-teaching</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

Second, among the four parts-of-speech, students found it harder to generate examples of after as an adjective compared to the other three parts-of-speech. The few correct examples given by students in the pre-teaching are as follows.
(9) (a) I participated in a lot of after-school activities.
   (b) I want to go to the after-party of Bruno Mars’.

Only a few students knew how to use after as an adjective at the beginning but were able to provide the sentences at the end of the workshop.

Phrase Generation

For phrase generation (question 2), students were asked to provide 12 expressions relating to the use of after. In Figure 3 below, we calculated the improvement of individual students in answering this part.\textsuperscript{10} The bars show the number of expressions students were able to provide at the end of the workshop. If a student wrote zero expressions on the pre-test and wrote 12 expressions on the post-test, their improvement was 12. If a student wrote 12 expressions at the beginning and 12 at the end, their improvement was zero (S10, S21, S24, S25, and S27). No student wrote zero at the beginning and zero at the end (which could also mean they made no improvement).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure3.png}
\caption{Improvement of students in phrases generation}
\end{figure}

From the results (see also Histogram in Figure 4) one can see that as many as eight students improved from zero to 12, three students improved by adding eight and nine phrases, respectively. As noted above, five students who initially wrote 12 phrases and who also wrote 12

\textsuperscript{10} For improvement, we provided the raw number difference instead of the gain score because the answers were not graded in scores. We thank the reviewer for bringing this up.
phrases at the end showed zero improvement although a qualitative analysis of their answers showed that they improved in the level of vocabulary difficulty probably due to the more formal examples taken from the corpus. The remaining students had a fair distribution in their improvement in number of generated phrases, as shown in the histogram.

![Histogram](image)

*Figure 4. The improved number of phrases generated*  
*[-ly + after]*

For the use of *after* that appears after the adverb *-ly* (e.g., *-ly after*) (question 3), the number of improvement is shown in Figure 5. Unlike the generation of phrases, the intuitive generation of *[-ly after]* was much more difficult. Only one student (S23) provided 12 expressions in both versions (thus, zero improvement).
From Figures 5 and 6, we noticed that most students were unable to generate [-ly + after] constructions intuitively. A smaller number of students were able to generate up to eight expressions. This shows the effectiveness of using a corpus when students had no idea what to write when they intended to produce uses of a certain construction, even if they might know the expressions. Therefore, the corpus provides a quicker access to examples with precision and effectiveness.
Figure 6. The improved number of [-ly + after] generated

[-ly + after + NOUN]

When the construction became longer and more complicated, intuitive generation became more implausible (question 4). This can be seen in Figure 7, in which a majority of the students had improvements of 12 instances, indicating the improvements from generating zero to 12 expressions.
Figure 7. Improvement of students in generation of \[-ly + \textit{after} + \textit{NOUN}\] expressions

From Figure 8, we can see that 19 out of 28 students (68%) generated nothing in the pre-tests but were able to generate as many as 12 expressions at the end with the assistance of the corpus. Only one student was able to generate 12 expressions in both tests. The remaining students were able to generate up to four expressions at the beginning of the workshop.
Based upon the results above, we can say that, even if *after* is a common preposition, students were not able to generate many uses when it appears in constructions. The patterns that we presented in this paper that have specific meanings can be found through using corpus-based instruction. Students can understand better how to use a construction more effectively if they know how to use the correct tool. This experiment, however, did not test the contextual meanings of *after* as presented in this paper. This is due to the limitation of time within a teaching slot and the need to instruct this in a longer period of time. However, from the above, we can see that by correctly and appropriately using the corpus, we can help students to be autonomous learners as they can discover more from the data they are searching.

Figure 8. The improved number of *[-ly + after + NOUN]* generated
CONCLUSION

This paper has demonstrated how a single word can be expanded to its collocations and finally to its pattern analyses. The results showed that the meaning of a word may affect the kinds of collocations it offers, and this can be unveiled through corpus linguistic analysis. The overall results display that the 'time and order' senses of after enable modifying of the follow-up actions in speed, manner (precision), or probability. This part of the analysis supports the recent corpus-based development from lexical to pattern analysis.

From our analysis of after, too, we confirmed the reasons why after was less researched: it was thought to be less varied in meanings, and its combination with verbs is also more central. Yet, many did not go beyond these points and looked at its functions in context. We found that, in discourse, after serves an important function by relating two events and emphasizing the significance of the second event. We used probes such as [-ly after] and [-ly after + NOUN] patterns to find the contextual functions of after in discourse. We showed the conceptualization and frequent uses in a corpus. It is often the event that occurs later that is the focus of discussion. The event that happens before the reference point is the trigger to the second event. Sometimes, the first event can be durative and as swift as a reference point itself, meaning that the first event can merely be a point of reference. As the impact of the first event on the second event is highlighted, the impact is most of the time negative; otherwise it deserves less attention to be mentioned. Often times, too, the impact means a change has occurred, and this change could be positive, negative, or neutral.

Based on the above, we suggest that further attention should be given to the contextual information of prepositions, rather than on its semantics or syntax only. The correspondence between semantics and pragmatics of a preposition is important to understanding its uses, which will be of great help to learners. By doing so, the relatedness of the collocated terms can be explicated and their motivation of co-appearance can also be explained.

As for pedagogical implications, we showed in the experiment that even a word that looks seemingly easy like after can be difficult when we try to use it in constructions. The pre- and post-tests showed that students had difficulty at first when they tried to generate expressions related to after even if they knew most of the uses. However, after a workshop on using a corpus, they performed better in producing
expressions that contain *after*. This showed how a corpus can provide information that the human brain cannot generate easily. Further studies need to be carried out to investigate how an instructor could invite more speculation from students to observe the prosody or underlying meaning of a word in a corpus.
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APPENDIX

Prepositions have many functions. *After* is a common function word. List one example for each type below.

1. **Part-of-speech**
   (a) Preposition

   ________________________________

   (b) Conjunction

   ________________________________

   (c) Adverb

   ________________________________

   (d) Adjective

   ________________________________

2. **List 12 expressions in which you will find the use of after.**

   1. ________________________________
   2. ________________________________
   3. ________________________________
   4. ________________________________
   5. ________________________________
   6. ________________________________
   7. ________________________________
   8. ________________________________
   9. ________________________________
   10. ________________________________
   11. ________________________________
   12. ________________________________

3. *After* can appear after adverbs that end with *–ly* (e.g., *-ly after*). List 12 expressions.

   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________

4. Copy the same 12 expressions from the question above but add a possible noun behind each of them. You can add up till three words (including the, a, and adjectives)

   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________
   ________________________________

**Pre-test:** Do you find this exercise difficult or easy? Why?

**Post-test:** Do you now find it easier to provide the answers? Why?
AFTER AND ITS CORPUS USES

AFTER in语料库的使用情形

鍾曉芳
國立政治大學

本研究目的為探討英語介系詞「after」及其在 British National Corpus 中的使用情形。除了檢視其辭典義項外，本研究亦觀察其句型分布、共現動词以及 [ly after]、[ly after + NOUN] 構式的使用，並藉由語料庫工作坊的教學前、後測分析語料庫與英語教學應用之效益。本研究觀察介系詞「after」的使用及其隱含在上下文中，較少被討論的語意信息，並整理出介系詞「after」如何呈現兩起事件之間關係的概念。最後，我們亦分析英語學習者參與語料庫工作坊前後的語言產出。結果顯示語料庫工作坊不僅提升了學習效益，也有助於加快學習者應用「after」表達的速度。本論文可作為功能詞相關的研究樣本，同時，亦證實語料庫於英語教學之應用是有效的。

關鍵詞：After、介系詞、共現詞、語料庫