

Linguistic Symmetry Breaking: A Corpus-based Analysis of the Nouns Ending in *Up* and *Down* *

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1. Introduction

The laws of nature, physical experiences that they offer, the spatial perception of human beings, and various physical and communicative demands have generated bountiful symmetrical and asymmetrical patterns in human language. These peculiar patterns recurrently manifest themselves in constructions involving particles. For example, *look someone up* and *look someone up and down* are idiomatic English expressions, whereas **look someone down* is not conventional (Goldberg 2016). Similarly, while *play down* has synonymous *downplay*, *play up* cannot be replaced by **upplay*. Some previous studies have alluded to the idiosyncrasies of particles (Cappelle 2005; McIntyre 2002; Otani 2015; Tyler & Evans 2003), but the riddles of symmetry and asymmetry concerning them have yet to be fully explored. Likewise, apart from pioneering works such as Nagashima (2017), few investigations have been conducted on the structures and semantics of the nouns composed of particles, not to mention the contrastive studies on the characteristics of the nouns ending with *up* and its putative antonym *down*. Nonetheless, from the viewpoint that language is a reflection of humans' conceptual understanding of the world and a manifestation of people's creative spirit as well as their enriched inner repository of linguistic knowledge, it is important to uncover the interaction and counteraction between verbs and particles to gain further insights into the ways in which people's perception and intention are encapsulated in the form of words and phrases. This paper aims to identify various structural and semantic features of the nouns ending in *up* and *down*, elucidating the rationale behind symmetrical and asymmetrical patterns that these compounds yield.

The present article is the first attempt ever to analyze the nouns ending in *up* and *down* from the perspective of symmetry and asymmetry. The verb-particle nouns that have both *up* and *down* versions and those with only one version will be presented. These symmetrical and asymmetrical phenomena will be attributed to the orientational conflict between verbs and particles. This paper also gives due attention to extraordinary types of nouns with the structure [Ving(-)*up/down*], [Ved(-)*up/down*], and [Ver(-)*up/down*], which have long been slighted and shunted off to the periphery. Their skewed frequencies will be explained on the basis of the orientation of particles and people's motivation for using

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verb-particle constructions in a particular syntactic environment. The subsequent analysis of the [N(-)*up/down*] type reveals hidden constructional schemas that enable a systematic interpretation of the words with this structure. Furthermore, it will be argued that hyphens have something to do with the elusive grammatical status of verb-particle nouns.

The remaining chapters of this article will be organized as follows. Chapter 2 presents some previous studies that provide important insights for the purpose of this investigation. Above all, Nagashima's pioneering research on the nouns ending in *up* (Nagashima 2017) and some key concepts such as the orientation of *up* and *down* (Otani 2015) will be introduced. In the following chapter, the research methodology and the data obtained from the investigation will be presented. Chapter 4 comprises four parts. In Section 4.1., a clear and detailed exposition of the verb-particle nouns involving *up* and *down* will be provided with a focus on symmetrical and asymmetrical patterns. Section 4.2. will provide a fairly balanced overview of hitherto disregarded types of compounds, with the main focus being placed on the [Ving(-)*up*] type. A detailed description of the semantics of the [N(-)*up/down*] type along with a lucid explanation of the constructional schemas that precisely capture the vast majority of the compounds of this type will be presented in Section 4.3. Section 4.4. will discuss the implication of hyphenation for the grammatical status of verb-particle nouns. A concluding chapter will summarize the findings made in the previous chapters and re-present them with especial reference to symmetry and asymmetry.

2. Previous studies

Some previous studies focused on the nouns ending in particles (Nagashima 2017), others on symmetrical and asymmetrical phenomena in language (Otani 2015; Tyler & Evans 2003). However, no previous research has ever combined the two subjects. In order to examine the nouns ending in particles from the viewpoint of symmetry and asymmetry, I will exploit some former fruitful discoveries concerning these topics. Some key definitions and ideas that form the basis of discussion will be provided in this chapter.

2.1. The definition of VPCs

It is necessary to clarify some key terms before advancing to substantive materials. First, verb-particle constructions (VPCs) are the combinations of a verb and a particle. They are usually polysemous and more often than not possess some meanings that are difficult or impossible to predict from their constituent parts. Combinations such as *give up* and *put out* are paradigm examples of the VPC. The term *particle* will be used in a broad sense to indicate a word that does not show any inflection. Hence, the term subsumes both adverbs and prepositions. It is sometimes difficult to determine whether a particular post-verbal element is an adverb or a preposition. However, this study will not bother to distinguish the two. The term particle is considerably useful when the focus is not on distinguishing

between adverbs and prepositions, but on the grammatical feature that these two parts of speech never change their forms.

A considerable number of terms have been devised by different linguists to indicate a pair of a verb and a particle that expresses non-compositional meanings: phrasal verbs, particle verbs, verb-particle combinations, and other terms. Among all these labels, this paper adopts the term VPC for two main reasons. First, it is one of the most widely adopted terms in the literature. Second, the term implies the idea that a VPC is a kind of construction, which is the view endorsed by this article.

It is important to recognize that some VPCs are more central than others. According to Bolinger (1971), a consensus has been achieved on the most central forms of VPCs. They typically consist of a verb proper and an adverbial particle such as *up*, *out*, or *over*. On the part of the verb, Nieda (2006) states that words such as *bring*, *call*, *come*, *get*, *give*, *go*, *look*, *make*, *put*, *set*, *take*, and *turn* are frequently used to form VPCs.

2.2. The degree of coalescence and the compositionality of VPCs

One of the most important features of VPCs is that they differ from one another in their *degrees of coalescence*. There are “all degrees of connectedness, from tightly bound phrases like *put out* in *put out a fire* through more loosely connected ones like *blot out* in *blot out the mistake* to others that are barely federated, like *brush out* in *brush out the dirt*” (Bolinger 1971: 3). This gradient of the level of coalescence has also been appreciated by Nieda (2006). She mentions that individual VPCs differ considerably in their degrees of connectedness, from the ones whose constituents are separate enough to appreciably retain their original meanings to the ones whose constituents have completely coalesced into a new idiom (Nieda 2006: 34).

The degree of coalescence correlates with the semantic predictability of VPCs. In the above-mentioned *put out*, the two constituents *put* and *out* are so closely connected that the combination of the two gains new meanings as a single unit. In contrast, in the case of *brush out*, both *brush* and *out* retain their original meanings to a considerable extent. Therefore, it is almost impossible to predict the meaning of *put out* from the meanings of constituents, whereas it is relatively easy to surmise the meaning of *brush out* if one is familiar with the words *brush* and *out*. Generally, the higher the degree of coalescence, the more difficult it becomes to predict the meaning of the unit as a whole, and vice versa. The predictability of the meaning of a VPC is a fair indication of the degree of coalescence.

It is often the case that a VPC shows varying degrees of coalescence and hence diverse meanings. A remarkable consequence of this characteristic is that the syntactic behavior of a VPC may differ depending on which meaning it expresses. For instance, *throw up* is polysemous. On one occasion it means *to vomit*, and on another, it means *to toss up*. The *throw up* which means *to vomit* is more tightly connected than the *throw up*

which means *to toss up*. This difference in the degree of coalescence concerns the separability of the VPC, as is illustrated below (Bolinger 1971: 9):

His throwing up of his dinner was stupid.

*His throwing of his dinner up was stupid.

His throwing up of the ball was stupid.

His throwing of the ball up (rather than down) was stupid.

Both the first and third sentences are grammatically correct. However, the difference in the grammaticality can be observed when the second and the fourth sentence are compared with each other. It is impossible to employ the second sentence to convey that *his vomiting of his dinner was stupid*. This is because, as he mentions, “a highly idiomatic phrasal verb such as *throw up*, in which both *throw* and *up* have deviated semantically from their meanings as separate items, does not admit the separation” (Bolinger 1971: 9). By contrast, if *throw up* is intended to mean *to toss up*, the verb and the particle are separable. This is because both the verb and the particle materially preserve their literal senses. Consequently, the fourth sentence is readily acceptable.

To summarize, VPCs vary significantly from one another in their degrees of coalescence. The difference in the degree of connectedness is closely related to the semantic predictability of VPCs. Because of this nature, delineating which combination is a VPC and which one is not is a futile project with little hope of success, for the delineation inevitably entails drawing an arbitrary dividing line on the cline of VPCs showing varying degrees of coalescence.

2.3. The definition and characteristics of VPNs

Former researchers interested in word formation concerning verbs and particles defined the verb-particle noun (VPN) as “a deverbal noun that consists of an infinitive verb plus a particle denoting movement” (Nagashima 2017: 76). However, there are some problems with this definition. First, the definition is somewhat vague, for it is unclear how to assess whether or not a particle denotes a movement. Even if a tool for measuring the denotation of movement is available, it would be still equivocal to what extent a particle has to denote movement in order for the noun to be qualified as a VPN. Second, this definition excludes nouns which consist of a verb and a particle but do not have the corresponding VPCs. Although the nouns of this type show intriguing features, they have nearly always been put outside the purview of research, one of the reasons being the relatively small number of such instances. However, investigations on such minor examples should not be disregarded in an attempt to construct any full-blown theory of word formation involving particles.

In contrast to the previous vague and narrow definition of the VPN, the scope of nouns investigated in this study has been set much clearer and wider than the traditional VPNs. Four classes of words ending in a particle will be investigated: (i) the words in which the infinitive form of a verb is connected with a particle, such as *checkup*, *showdown*, and *rubdown*; (ii) the words in which the present participle of a verb is attached to a particle, such as *pickingup*, *comingdown* and *mopping-up*; (iii) the words in which the past participle of a verb is combined with a particle, such as *grownup*, *brokendown* and *rolledup*; (iv) the words in which a noun is attached to a particle, such as *thumbs-up*, *belly-up* and *sundown*.

There are several points to be noted. First, the term VPN will be used in this article to denote a word which is classified into the class (i). That is to say, the VPN is defined as a noun with the structure ‘an infinitive verb plus a particle’. The VPNs investigated in this research are the ones in which a particle is either *up* or *down*. Thus, the notations *up*-VPNs and *down*-VPNs will be used according to the particle that they possess. Expressions such as [Ving(-)*up*] and [Ving(-)*down*] (for the class (ii)), [Ved(-)*up*] and [Ved(-)*down*] (for the class (iii)), and [N(-)*up*] and [N(-)*down*] (for the class (iv)) will be used for simplicity. The parentheses indicate that both hyphenated versions and unhyphenated versions may be used. These notations have been set for convenience, for the frequent occurrences of phrases such as ‘a past participle of a verb + *up*’ would be an eyesore. Second, VPNs in the traditional sense form a subset of (i). Third, according to the criterion above, a word which is made of a verb plus a particle but does not have the corresponding VPC may be qualified as a VPN. Thus, words such as *sit-in*, *teach-in*, *work-in*, *talk-in*, *think-in*, *be-in*, and *love-in* (Adams 2001: 77) are properly called VPNs. Fourth, this paper has selected to regard hyphenated VPNs as different from unhyphenated ones. A hyphen is frequently employed to combine a particle with the preceding element. Any research on VPNs necessarily faces the question of how to deal with hyphenated examples. One solution to the problem is to consider them as equal to unhyphenated ones. Nagashima (2017), for instance, selected not to distinguish hyphenated VPNs from unhyphenated ones. Nevertheless, as will be discussed in the following analysis, hyphens sometimes give not only the difference in semblance but also certain grammatical status to VPNs. Consequently, a separate heading for each form will be set in the tables in the following chapters. Lastly, although the term VPN has been adopted here as an acronym for ‘verb-particle NOUN’, it is not always the case that a VPN behaves similarly to a firmly established noun. As will be shown later, VPNs show a number of characteristics which cast doubt upon the validity of heedlessly labeling them as nouns. Bauer (2005: 24) said, “a particular word may show the form of more than one part of speech and have the functions of more than one part of speech at the same time.” If what he said is true of ordinary words, doubly or trebly may this be affirmed of VPNs.

2.4. The semantic features of *up*-VPNs

On the semantic features of *up*-VPNs, Nagashima (2017) states that the meanings of *up*-VPNs investigated can roughly be classified into three categories. Below are the three semantic types of *up*-VPNs that she presented (Nagashima 2017: 83-84):

- (i) ‘To do the action denoted by the base *up*-VPC’ (sense of action)
- (ii) ‘A person/thing that does the action denoted by the base *up*-VPC’ (sense of agent/instrument/cause)
- (iii) ‘A person/thing that is acted upon by, or involved in the action denoted by the base *up*-VPC’ (sense of patient)

Although the first type is the most frequent among 100 *up*-VPNs used in her survey, she emphasizes the importance of the second sense. The first reason she cites for the claim is that the high frequency of the sense (i) is a common character for nouns converted from verbs rather than the singularity of *up*-VPNs. The second reason she mentions is that the number of *up*-VPNs possessing the second sense (24 out of 100) is much larger than that of *down*-VPNs (six out of 100).

The sense (ii), she elaborates, is “a general notion that encompasses any entity that can be interpreted, either literally or metaphorically, as conducting the action of the base *up*-VPC” (Nagashima 2017: 84). Thus, it includes “not only the semantic role of Agent but also Cause and Instrument” (Nagashima 2017: 84).

Highlighting the peculiarity of the second sense of [V(-)*up*], she proposes a schema formulated as follows (Nagashima 2017):

[[X]_v *up*]_N ‘a person/thing that does the action denoted by the base *up*-VPC’

The sign above is intended to denote that a noun formed by an infinitive verb plus *up* is paired with the sense (ii). As evidence for the existence of such schema, she has presented three newly created nouns which she claims fit into the schema: *click-up*, *Kleen-up*, and *PostUp*.

Nagashima (2017) has attributed the tendency for *up*-VPNs to possess the sense (ii) to a certain property of the particle *up*, namely its ‘agent-orientation’. This perspective appears to have been brought to her by a study of synonymous *up*-VPCs and *down*-VPCs conducted by Otani. However, she seems to have slightly misunderstood the claim by Otani (2015), for he has not used the term ‘agent-orientation’ in his paper. What he insists *up* has is the ‘event-orientation’, which will be explicated in the following.

2.5. The event- and patient-orientation of *up* and *down*

Otani (2015) collected instances of three types of synonymous VPCs (*burn up/down*, *drink up/down*, and *shoot up/down*) in the British National Corpus (BNC) and analyzed their behavioral differences at grammatical and semantic levels. He has made two important claims on the orientation of *up* and *down*. First, *up*-VPCs are “event-oriented in that the particle refers to the final state of the event described by a verb phrase” (Otani 2015: 222). More specifically, the event-orientation of *up* means that *up* is semantically closely tied to the preceding verb and places the focus on the agent of the sentence. This conclusion has been drawn from the observation that *up*-VPCs are more likely to be used unergatively and in the ‘verb + particle + object’ order, and are less likely to appear in the passive voice. Second, *down*-VPCs are “patient-oriented in that the particle refers to the final state of the patient of the event” (Otani 2015: 222). To put it another way, *down* puts a spotlight on the patient of the predicate and profiles the resultant state of it. This deduction has been derived from the observation that *down*-VPCs show an inclination to be used unaccusatively and in the ‘verb + object + particle’ order, and exhibit a propensity to occur in the passive voice.

2.6. The semantics of *up* and *down*

Former researchers have classified various meanings associated with *up* and *down* into several groups. For example, in a monograph on the semantics of English prepositions, Tyler and Evans (2003) provided a moderately detailed account of the semantics of *up* and *down*. Although their primary focus was on elegantly illustrating “the way in which experiential correlations based on proto-scene can give rise to meanings or senses that, in some cases, are wholly non-spatial in character” (Tyler & Evans 2003: 136), their classification of the core meanings of *up* into three groups and that of *down* into three merits attention. Firstly, the semantic cluster for *up* that they described will be presented below with some modifications in the examples (Tyler & Evans 2003):

The semantic clusters for *up*

- (i) The more sense (e.g. *plump up the cushions, fatten up the calf, pump up the volume, turn up the heat, ...*)
- (ii) The improvement sense (e.g. *read up on British history, brush up my German, get dressed up and go to a nice restaurant, ...*)
- (iii) The completion sense (e.g. *fill up the pitcher with beer, gas up the car for the trip, load up the truck, finish up this work today, close up the shop for the night, use up the batteries, time is up, drink up the wine, ...*)

To these groups may be added another semantics of *up*, which indicates that the action described by the verb is performed on a substantial part of the object (McIntyre 2002):

- (iv) The maximal effect sense (e.g. *soak/dry/drink up the water, chew/eat up the food, burn up the papers, buy up the houses, the boat broke up, roll the carpet {right/back} up, load/fill the truck right up, pump the tyres right up, fold the map back up, the animal curled right up, the sky cleared right up, ...*)

The completion sense of *up* has further been elaborated by Cappelle (2005). By an extensive web search, he collected a number of *up*-VPCs and found that “the innovative, productive usage of *up* runs in families of verbs sharing some semantic content” (Cappelle 2005: 415). Below are some clusters of verbs with which *up* with the completion sense tends to occur (Cappelle 2005):

- (a) Verbs of mixing (e.g. *mash, mix, mush, scramble, shake, squish, stir, ...*)
- (b) Verbs of heating (e.g. *fry, grill, heat, warm, ...*)
- (c) Verbs of cleaning or treating-with-a-product (e.g. *clean, grease, polish, shine, wash, wipe, ...*)
- (d) Verbs of locking, fastening or tying (e.g. *bandage, bind, close, glue, lock, seal, shut, tape, tie, tighten, truss, wrap, ...*)
- (e) Verbs of repairing (e.g. *fix, heal, patch, sew, weld, ...*)
- (f) Verbs of destruction, physical harm, or spoilage (e.g. *bash, beat, bloody, blow, bollox, bugger, bust, carve, chop, cut, duff, fuck, grind, knacker, mess, pound, punch, screw, slice, snag, stab, tear, ...*)

Tyler and Evans (2003) have also described the semantic cluster for *down*. What follows are the three senses of *down* along with some modified examples:

The semantic cluster for *down*

- (i) The less sense (e.g. *slim down, turn the music down, water down, ...*)
- (ii) The worse/inferior sense (e.g. *be down on his luck, be down and out, be down on fad diets, ...*)
- (iii) The completion sense (e.g. *the battery has run down, we are down to the last moment of the game, he has three papers down and one to go, ...*)

To these groups may be added another semantic cluster of *down*, which corresponds to the sense (iv) of *up* (Cappelle 2005; McIntyre 2002):

- (iv) The maximal effect sense (e.g. *brush down*, *buff down*, *burnish down*, *butter down*, *clean down*, *dust down*, *file down*, *glaze down*, *grease down*, *grit-blast down*, *hose down*, *jetspray down*, *mop down*, *polish down*, *prime down*, *pumice down*, *rinse down*, *rub down*, *sand down*, *scour down*, *scrub down*, *soap down*, *sponge down*, *spray down*, *swab down*, *vacuum down*, *wash down*, *wipe down*, ...)

2.7. The semantic bleaching and extension of *up* and *down*

A correlation between the degree of semantic extension and the bleaching of the vertical sense of a particle has been pointed out by Otani (2015). According to him, a particle that has undergone semantic bleaching can be associated with a variety of events irrelevant to the vertical axis and therefore may be used to convey the resultant state of diverse abstract events. On the other hand, if a particle preserves the sense of movement in the vertical direction, it can only show itself in events that are semantically compatible with that direction. As a result, the particle will be less likely to occur simultaneously to abstract events which cannot evoke a sense of direction. Hence it will be of limited use.

3. Data and methodology

The corpus used in the research is Corpus of Historical American English (COHA), which is a balanced corpus of American English containing 400 million words collected over the span of 200 years from 1810 to 2009. The reason why COHA was selected is that it contains a wide range of nouns ending in *up* and *down* used in the period. All the examples presented in the following chapters are from COHA unless otherwise mentioned. All the italicization in the excerpts is mine unless otherwise mentioned.

As is often the case with a large-scale corpus, search results sometimes include false positives. For example, there are some cases in which the gap between two words have been somehow lost during the process of creating a corpus. As a consequence, the mingled non-word gets several hits on the search engine. The example below illustrates such an instance.

- (1) He is *settingup* a foundation -- a kind of shrine to Capitalism -- to keep the government from spending the inheritance taxes on foreign aid and all the other socialistic things he hates.

In this sentence, *settingup* cannot be considered as valid. This is because counting *settingup* as a noun makes this sentence grammatically unacceptable. As for infrequent lemmas, these unwanted examples have manually been removed. However, as for frequent lemmas, there is a possibility that not all false positives have been eliminated. This state of affair is undesirable, but the number of such errors would not be so significant that the claims made in this paper will still be valid.

Besides obvious errors, there are some words which, though their status as a noun is highly dubious, have nonetheless not been excluded from the data. An example of such a case is as follows.

(2) The *settingup* of new machines often led to riots by bands of machinebreakers.

At first glance, *settingup* in this sentence seems to be the result of an error of some kind. However, it is impossible to conclude merely by reference to its syntactic context that this is an error. Another example is as follows.

(3) "These ragweed sure are some nuisance," Orin said, without *lookingup*.

In this sentence, the possibility of *lookingup* being used as a noncount noun cannot be excluded. As long as the possibility of being an authentic example remains, seemingly erroneous words have not been excluded from the data.

When GROUP BY LEMMAS is selected in the search options of COHA, the token frequency shown right next to a lemma will indicate that of a singular form (December 2019). If a lemma is clicked, the sum total of the frequency of singular and plural forms can be obtained by looking at the number of the last example on the last page. For example, if a search of *makeup* grouped by lemma is conducted, COHA's FREQUENCY interface shows that its frequency is 2496. However, the number of the last example in CONTEXT page is 2509. As a result, it will be deduced that the plural form *makeups* appear 13 times in the corpus.

The following table shows all the *up*- and *down*-VPNs that share the same verb. These nouns have been obtained by searching all the nouns that end with *up* or *down* and are tagged as a noun, then manually eliminating errors and unqualified words such as *group*, *adown*, and *pick-me-up* by reference to the criteria for the VPN explained in Section 1.3. and then finding pairs that share the same verb.

Table 1: *Up-* and *down-*VPNs sharing the same verb attested in COHA

	[Vdown]	freq.	[V-down]	freq.	[Vup]	freq.	[V-up]	freq.
1	[BREAKDOWN]	2559	[BREAK-DOWN]	104	[BREAKUP]	559	[BREAK-UP]	238
2	[TOUCHDOWN]	1427	[TOUCH-DOWN]	20	[TOUCHUP]	4	[TOUCH-UP]	48
3	[SHOWDOWN]	900	[SHOW-DOWN]	108			[SHOW-UP]	4
4	[SLOWDOWN]	523	[SLOW-DOWN]	14			[SLOW-UP]	3
5	[CRACKDOWN]	495	[CRACK-DOWN]	6	[CRACKUP]	25	[CRACK-UP]	61
6	[SHUTDOWN]	489	[SHUT-DOWN]	77			[SHUT-UP]	33
7	[LETDOWN]	201	[LET-DOWN]	83	[LETUP]	76	[LET-UP]	97
8	[SHAKEDOWN]	193	[SHAKE-DOWN]	20	[SHAKEUP]	81	[SHAKE-UP]	194
9	[RUNDOWN]	159	[RUN-DOWN]	77	[RUNUP]	12	[RUN-UP]	114
10	[SITDOWN]	65	[SIT-DOWN]	67	[SITUP]	24	[SIT-UP]	118
11	[COMEDOWN]	51	[COME-DOWN]	13			[COME-UP]	3
12	[SPLASHDOWN]	47	[SPLASH-DOWN]	1			[SPLASH-UP]	1
13	[MARKDOWN]	38	[MARK-DOWN]	3	[MARKUP]	186	[MARK-UP]	93
14	[PUTDOWN]	37	[PUT-DOWN]	70			[PUT-UP]	66
15	[LOCKDOWN]	27	[LOCK-DOWN]	2	[LOCKUP]	159	[LOCK-UP]	124
16	[TURNDOWN]	22	[TURN-DOWN]	7	[TURNUP]	3	[TURN-UP]	23
17	[TAKEDOWN]	19	[TAKE-DOWN]	6	[TAKEUP]	1	[TAKE-UP]	14
18	[BACKDOWN]	17	[BACK-DOWN]	9	[BACKUP]	741	[BACK-UP]	134
19	[BLOWDOWN]	15	[BLOW-DOWN]	1	[BLOWUP]	114	[BLOW-UP]	92
20	[CUTDOWN]	10	[CUT-DOWN]	6	[CUTUP]	21	[CUT-UP]	84
21	[WASHDOWN]	9	[WASH-DOWN]	2	[WASHUP]	5	[WASH-UP]	16
22	[WRITEDOWN]	9	[WRITE-DOWN]	42	[WRITEUP]	4	[WRITE-UP]	107
23	[LAYDOWN]	7	[LAY-DOWN]	3	[LAYUP]	93	[LAY-UP]	23
24	[PULLDOWN]	8			[PULLUP]	7	[PULL-UP]	61
25	[SHOOTDOWN]	6	[SHOOT-DOWN]	1			[SHOOT-UP]	4
26	[CLOSEDOWN]	5			[CLOSEUP]	571	[CLOSE-UP]	2500
27	[BEATDOWN]	4	[BEAT-DOWN]	1	[BEATUP]	7	[BEAT-UP]	226
28	[HOLDDOWN]	4	[HOLD-DOWN]	9	[HOLDUP]	434	[HOLD-UP]	438
29	[THROWDOWN]	3	[THROW-DOWN]	1	[THROWUP]	1	[THROW-UP]	9
30	[TRICKLEDOWN]	3	[TRICKLE-DOWN]	8			[TRICKLE-UP]	1
31	[MOPDOWN]	2			[MOPUP]	1	[MOP-UP]	26
32	[SETDOWN]	2	[SET-DOWN]	4	[SETUP]	1169	[SET-UP]	548
33	[DRYDOWN]	1	[DRY-DOWN]	1			[DRY-UP]	1
34	[FOLDDOWN]	1	[FOLD-DOWN]	1	[FOLDUP]	5	[FOLD-UP]	15
35	[ROLLDOWN]	1			[ROLLUP]	2	[ROLL-UP]	24
36	[SCRUBDOWN]	1	[SCRUB-DOWN]	5			[SCRUB-UP]	4
37	[STEPPDOWN]	1	[STEP-DOWN]	4	[STEPUP]	4	[STEP-UP]	59
38	[TIEDOWN]	1	[TIE-DOWN]	1	[TIEUP]	28	[TIE-UP]	307
39			[STAND-DOWN]	10	[STANDUP]	51	[STAND-UP]	73
40			[BUILD-DOWN]	4	[BUILDUP]	691	[BUILD-UP]	336
41			[CHANGE-DOWN]	2	[CHANGEUP]	29	[CHANGE-UP]	22
42			[DRESS-DOWN]	2	[DRESSUP]	1	[DRESS-UP]	76
43			[LOOK-DOWN]	2	[LOOKUP]	6	[LOOK-UP]	8
44			[MOVE-DOWN]	1			[MOVE-UP]	4
45			[SCREW-DOWN]	1	[SCREWUP]	27	[SCREW-UP]	38
46			[SIZE-DOWN]	1			[SIZE-UP]	4
47			[WALK-DOWN]	1	[WALKUP]	21	[WALK-UP]	112
48			[WIND-DOWN]	1	[WINDUP]	132	[WIND-UP]	138
49			[WIPE-DOWN]	1			[WIPE-UP]	1

4. Analysis

4.1. *Up*-VPNs and *down*-VPNs

This section begins by exploring the symmetry of *up*- and *down*-VPNs. The characteristics of the verbs shared by *up*- and *down*-VPNs and the particles' semantic contribution to these verbs will be elucidated. The subsequent subsection delves into the asymmetry of *up*- and *down*-VPNs. The types of verbs that prefer only one of *up* and *down* and the reason behind the selection will be delineated. Throughout the entire section, a considerable number of examples will be provided to crystallize the argument.

4.1.1. Characteristics of *up*- and *down*-VPNs that share the same verb

This subsection aims to make several discoveries on the symmetry of *up*- and *down*-VPNs. Some VPNs are symmetrical in the sense that both *up*- and *down*-VPNs, and not one of a pair, are attested. It will be argued that the verb-internal orientation and the orientation of particles play an important role in the emergence of symmetrical patterns. Moreover, the particles' semantic contribution to the verbs of these symmetrical VPNs will be explored.

The first character of *up*- and *down*-VPNs that share the same verb is that both the base *up*- and *down*-VPCs are coexistent. For example, *break(-)up* and *break(-)down* share the same verb *break*. Their base VPCs, *break up* and *break down*, are both familiar expressions in English. The data in Table 1 show that, out of 49 types of *up*-VPNs, as many as 48 types possess their base *up*-VPCs. The only exception seems to be **trickle up*. On the part of *down*, as many as 48 types out of 49 types of *down*-VPNs possess their base *down*-VPCs. The only exception appears to be **build down*. Therefore, it follows that the base *up*- and *down*-VPCs are coexistent in as many as 47 pairs of *up*- and *down*-VPNs. Thus, it is fairly reasonable to claim that one of the characteristics that *up*- and *down*-VPNs sharing the same verb have in common is the coexistence of their base *up*- and *down*-VPCs.

Another property that characterizes *up*- and *down*-VPNs sharing the same verb is that many of the shared verbs do not specify a particular direction. Out of 49 verbs shared by *up*- and *down*-VPNs in Table 1, as many as 47 verbs do not indicate the upward or downward direction. The only exceptions are *slow* and *trickle*, both of which inherently possess a sense of downward orientation. Since 47 out of 49 is fairly large, it could be argued that non-stipulation of certain directions by the shared verb is one of the features that characterize *up*- and *down*-VPNs sharing the same verb.

The question then arises as to why the verbs which are used both with *up* and with *down* are unlikely to evoke a sense of direction in isolation. This fact may be explained in terms of the semantic collision between upward and downward orientations. To put it in more specific terms, a verb shared by both *up*- and *down*-VPNs is unlikely to designate a particular direction because if the verb indicates an upward direction, the upward

meaning will clash with the downward meaning inherent in the particle *down*, and if the verb denotes a downward direction, the downward meaning will run counter to the upward meaning of the particle *up*. To cite an example, the verb *lock* is shared by *lock(-)up* and *lock(-)down*. The verb *lock* does not, at least for most of us, evoke a sense of direction. This is predictable because if *lock* evokes a sense of upward direction, it would be difficult for the word to be tied with *down*, which evokes a sense of downward direction. The reason for the difficulty of the combination is that the hypothetical upward sense of *lock* would be in conflict with the downward sense of *down*. Similarly, if *lock* evokes a sense of downward direction, it would be difficult for the word to be united with *up*, which evokes a sense of upward direction. The reason for the difficulty of coupling is that the hypothetical downward sense of *lock* would be in conflict with the upward sense of *up*. To summarize, non-specification of a particular direction by the verbs shared by *up*- and *down*-VPNs may be explained from the perspective of the semantic discord between upward and downward directions that is to be fomented if the verbs possess directional senses.

The third feature of *up*- and *down*-VPNs sharing the same verb is that the roles that the particles play in their base VPCs can roughly be classified into three classes: the addition of a tinge of telicity to the verb, the implication of the meaning of maximal effect, and the specification of the direction of the event denoted by the verb. It should be mentioned here that these roles are not mutually exclusive. That is to say, *up* and *down* may simultaneously express more than one meaning. In the ensuing paragraphs, each of the three roles of *up* and *down* along with the features of several clusters of verbs will be elaborated.

The first role that *up* and *down* play in the base VPCs of *up*- and *down*-VPNs listed in Table 1 is adding a sense of completion or telicity to the event expressed by the shared verb. There are two conspicuous groups of verbs that form *up*- and *down*-VPCs in which the particles function as telic markers. Those are the verbs that indicate causing damage to some entity and the verbs that impose certain forms of restrictions on some entity. What follows is an explanation of the features of the two groups of verbs.

The first group consists of verbs that indicate destruction, physical or mental harm, spoilage, and other types of damage to entities. This class roughly corresponds to the class (f) presented in Section 2.6. Out of 49 verbs that appear in Table 1, six types are considered to fall into this category: *break*, *beat*, *blow*, *crack*, *cut*, and *screw*.

The verbs of this class share two features. The first common feature is that the verbs in this class do not designate a particular direction. For example, no directional senses are encoded in the verb *beat*. It is true that the verb, along with encyclopedic knowledge, may cause listeners to visualize a man who gets knocked off his feet or someone who falls to the ground after being knocked out. Importantly, however, no directional sense is involved in the verb itself as opposed to verbs such as *jump*, which inherently entails an

action in a certain direction. Secondly, when these verbs appear as parts of VPCs, the semantic contribution of *up* and *down* to the VPCs will mainly be adding a telic sense to them. For instance, in the expression *break down*, the particle *down* works as a telic marker indicating the completion of the process of breaking. Some speakers of English may feel a certain directional sense attached to it. However, the claim that the particle does add a sense of telicity to the VPC seems irrefutable.

The second class comprises restrictive verbs, which are concerned with locking, fastening, tethering, and other kinds of actions that govern the behavior of the patient. This class roughly corresponds to the class (d) in Section 2.6. Out of 49 verbs that appear in Table 1, five types are judged to be the members of this class: *close*, *fold*, *lock*, *shut*, and *tie*.

The verbs in this class share two features. The first is that they do not specify any particular direction in and of itself. Not a single verb in this class evokes an event, movement, or action in a particular direction in isolation. Moreover, when these verbs form VPCs with *up* and *down*, the semantic contribution of the particles to the VPCs will mainly be adding telicity to them. This view is supported by Cappelle (2005), who classified *up* functioning as a telic marker into five groups presented in Section 2.6.

The second role of *up* and *down* in the base VPCs of *up*- and *down*-VPNs listed in Table 1 is the implication of a maximal effect. In more concrete terms, *up* and *down* sometimes indicate that “the verbal event has a maximal effect on the entity appearing as direct argument” (McIntyre 2002: 97). One class of verbs to which *up* and *down* add this semantics is composed of so-called surface treatment verbs, which will be elaborated in the following.

One cluster of verbs to which *up* and *down* add the meaning of a maximal effect consists of surface treatment verbs. Verbs of this group appear in the class (iv) presented in Section 2.6. The verbs in this class typically indicate an action in a specified manner that affects the surface of an entity. Out of 49 verbs that appear in Table 1, five types are considered to belong to this category: *dry*, *mop*, *scrub*, *wash*, and *wipe*.

The verbs in this class share several features. The first is that the verbs in this class do not encode a directional sense in its semantics. For example, the verb *wash* does not possess a meaning concerning a particular direction. The verb may cause hearers to imagine a scene in which something is washed. Since there are many ways of cleansing, the process of washing might involve a movement in a particular direction. Even if that is the case, those images are something that is created in the minds of people, and not the ones that are intrinsic in the semantics of the verb itself. Second, the particle *down* gives an idiosyncratic semantic contribution to the *down*-VPCs that are formed with the verbs in this class. This unique contribution has been explicated by McIntyre (2002). He maintains that the particle *down* occurs with many verbs of surface treatment and consistently specifies that the action is performed on a substantial part of the entity

appearing as the object (McIntyre 2002). Moreover, he states that the meaning of a verb is preserved intact in *down*-VPCs created by surface treatment verbs (McIntyre 2002). Furthermore, McIntyre (2002) mentions that *down* in these *down*-VPCs is not a telicity marker, confirming the legitimacy of his claim by the grammatical correctness of the phrase *dust (down) the piano {for/in} a minute*.

The third function of *up* and *down* in the base VPCs of *up*- and *down*-VPNs listed in Table 1 is the specification of the direction of the event denoted by the verb. To be more specific, *up* and *down* sometimes follow a verb that does not imply any particular direction and specify the direction in which the event or action expressed by the verb is conducted. What follows is a somewhat detailed account of the verbs to which *up* and *down* semantically contribute in this way.

There is a conspicuous group of verbs that form *up*- and *down*-VPCs in which the particles function as devices that specify the direction in which the event denoted by the verb is conducted. This group comprises the verbs that denote a certain type of movement. The verbs shared by *up*- and *down*-VPNs that belong to this group are *come*, *look*, *move*, *run*, *step*, and *walk*.

What these verbs have in common is that, even though they do not indicate a particular direction in isolation, they can be followed by *up* and *down* that may evoke a sense of direction to yield VPCs and VPNs. For example, the verb *step* does not evoke a sense of upward or downward orientation in and of itself. However, it is widely known that the verb can appear adjacently to *up* to become *step up*, which evokes the upward orientation, and can occur simultaneously to *down* to yield *step down*, which evokes the downward orientation. According to Oxford English Dictionary (OED), the meaning of the two VPCs are as follows:

- to step up: *intransitive*. To go up from a lower position to a higher; to mount, ascend (also *figurative*); *spec.* to go up by treading on a step or stairway. Also, in later use, to go a short distance, or pay a short visit, to a place which is, or is regarded as, higher. (OED: 1989)
- to step down: To go from a higher level to a lower, esp. by treading on a step or stairway. Also, to go a short distance to a place which is, or is regarded as, lower. Also *figurative*, to withdraw or retire from office. Originally *U.S.* (OED: 1989)

Based on the descriptions above, it could be safely argued that *up* and *down* in these expressions designate spatial directions or sometimes directions in a figurative sense. To summarize, the verbs in this class do not designate particular directions, but when they form VPCs with *up* or *down*, the upward or downward orientations will be specified.

Meanwhile, the VPCs formed by the verbs in this class tend to retain directional senses even when they are converted into nouns. For example, the above-mentioned *step up* and *step down* can be converted into nouns, the meanings of which are as follows:

step-up: 1. An increase in rate or quantity; an intensification. 2. Chiefly *plural*. A step taken on to a platform (such as a bench, etc.) and back again, repeated as a fitness exercise. (OED: 1989)

step-down: 1. A reduction or decrease. 2. The act of stepping down or withdrawing from a position. (OED: 1989)

What is remarkable is that *up* and *down* in these nouns still maintain a sense of direction. On the first sense of *step-up*, an increase in the rate indicates an upward direction in an abstract scale of zero to one hundred percent, while an increase in quantity may evoke an elevation of something either in the physical world or in an abstract world. The second sense of *step-up* unarguably denotes an upward physical movement. It is reasonable to deduce that these implications of an upward direction are brought by the particle *up*. Similarly, *step-down* indicates a downward direction either in a purely physical sense or in a metaphysical sense. It should be mentioned that *step-down* can be used metaphorically as well. The sense of withdrawing from a position comes within the purview of this type of usage. In this figurative use, the word evokes a metaphorical sense of downward direction. The impression of a downward direction in these meanings of *step-down* is evidently triggered by the particle *down*.

Although in some cases the semantic contribution of *up* and *down* to VPCs or VPNs is fairly straightforward, there are many other cases in which the meanings that *up* and *down* add to VPCs or VPNs are hard to penetrate. For instance, the verb-particle construction *cut up* possesses numerous different meanings. One of them is to “divide into parts by cutting” (OED: 1989). In this case, *up* in all likelihood imparts telicity to the phrase. However, according to Oxford Advanced Learner’s Dictionary (OALD), *cut up* can also mean “to behave in a noisy and silly way” (OALD). In this case, the semantic contribution of *up* to the VPC is immensely hard to apprehend. A native speaker of English might be able to feel the role that *up* plays in this particular expression. Be that as it may, the role is still so elusive and impalpable that it could not be elucidated by the tongue of mediocrities.

Before closing a discussion on *up*- and *down*-VPNs that have *down*- or *up*-counterparts, one more group of verbs should be referred to. This exceptional class consists of the verbs that may indicate an event that induces both upward and downward directions. This type of verb is relatively rare and is more often than not hard to judge. One of the few verbs that are considered to be classified into this group is the verb *shake*. The verb *shake* causes a sensation that some object is vibrating in two opposite directions.

For example, in the expression *an earthquake shook the house*, the verb *shake* evokes an intermittent upward and downward tremor of the house. Since the verb can evoke both the upward and downward orientations, it would be of little surprise that it can combine either with *up* or with *down*.

To summarize this subsection, several discoveries concerning *up*- and *down*-VPNs sharing the same verb have been made. First of all, it has been pointed out that *up*- and *down*-VPNs that share the same verb tend to have their base *up*- and *down*-VPCs that share the same verb. Second, it has been revealed that the verbs shared by *up*- and *down*-VPNs tend not to specify a particular direction in and of itself. The reason behind this tendency for non-designation of a particular direction has received theoretical support. It has been proposed that non-specification of directions by the verbs could be explained in terms of the semantic collision between upward and downward orientations that will inevitably occur when *up* or *down* attaches to them. Third, the roles that *up* and *down* play in VPCs have been discussed. It has been articulated that they can roughly be classified into three types: the addition of a tinge of telicity to the verb, the implication of the meaning of maximal effect, and the specification of the direction of the event denoted by the verb. Moreover, the four distinct classes of verbs that are frequently shared by *up*- and *down*-VPNs have been found: destructive verbs, restrictive verbs, surface treatment verbs, and a certain type of motion verbs. It can be observed from Table 1 that roughly half of the verbs shared by both *up* and *down* are classified into one of these categories. There is a feature that the verbs in all of these classes have in common: they do not designate a particular direction per se. In addition to this property, the verbs in the first and the second classes have in common that, when they are followed by *up* and *down* to yield *up*- and *down*-VPCs, they receive virtually no meaning or a tinge of telicity from them. Moreover, when *up* and *down* attach to the verbs in the third class to form *up*- and *down*-VPCs, they will generate a unique interpretation that the action denoted by the verb is performed on a substantial part of the entity appearing as the object. Furthermore, when the verbs in the fourth class form *up*- and *down*-VPCs, the particles may indicate a particular direction. A moderately detailed account of the verbs in each class as well as several concrete examples has been provided. Lastly, the relatively rare class of verbs that indicate two opposite directions has been mentioned. It has been pointed out that the verbs in this class can easily unite with both *up* and *down* precisely because they internally and intrinsically possess both orientations.

4.1.2. Characteristics of *up*- and *down*-VPNs that do not have corresponding VPNS

The preceding subsection dealt with the symmetry of *up*- and *down*-VPNs, namely, the phenomenon that both *up*- and *down*-VPNs exist for certain types of verbs. In contrast, this section will focus on the asymmetry concerning *up*- and *down*-VPNs. They are asymmetrical in the sense that only one of *up*- and *down*-VPNs exists.

The first asymmetry observed in the collected data is that *up*-VPNs made of verbs that indicate the upward orientation are unlikely to have the corresponding *down*-VPNs. For example, the verbs that are related to a physical increase in vertical elevation or an action in the upward orientation such as *cock*, *fill*, *jack*, *jump*, *lift*, *pick*, *pile*, and *toss* unite with *up* to form *cock(-)up*, *fill-up*, *jack-up*, *jump-up*, *lift-up*, *pick(-)up*, *pile(-)up*, and *toss(-)up*. However, none of them bonds with *down* to become *down*-VPNs. Moreover, the verbs that indicate an increase in temperature or speed such as *heat*, *speed*, and *warm* also connect to *up* to form *heat-up*, *speed(-)up*, and *warm(-)up*, but never unite with *down* to create *down*-VPNs. Furthermore, the verbs that express the upward orientation in the spiritual sense such as *cheer* and *perk* also bond with *up* to form *cheer(-)up*, and *perk-up*. However, they never unite with *down* to become *down*-VPNs.

The rationale behind the absence of the corresponding *down*-VPNs may be elucidated in terms of the semantic clash between the upward orientation implied by the above-mentioned verbs and the downward orientation inherent in the particle *down*. The verbs cited above evokes a scene in which something goes up in the physical sense, the quantity of something grows, the temperature or speed of something increases or people will be in high spirits. In contrast, as illustrated in Section 2.6., the particle *down* possesses the less sense, which includes various meanings associated with a decrease, depletion, descend, or a decline of something. Apart from dvandvas such as *up-down*, the consequence of mixing the two semantically conflicting elements would be nonsense. Hence, it would be reasonable to make the case that, because the two opposite orientations cannot coexist in a single unit, namely a word, the verbs that evoke the sense of upward orientation are unlikely to combine with *down* to form *down*-VPNs.

In addition to the verbs that imply the upward orientation, many other verbs have a close rapport with the particle *up*. For example, *brush*, *bust*, *carve*, *check*, *cook*, *fix*, *fry*, *fuck*, *mix*, *mash*, *spruce*, *wrap*, and numerous other verbs exhibit a preference for the particle *up* over the particle *down*. As a result, VPNs such as *brush(-)up*, *bust-up*, *carve-up*, *check(-)up*, *cook-up*, *fix(-)up*, *fry-up*, *fuck(-)up*, *mix(-)up*, *mash(-)up*, *spruce-up*, and *wrap(-)up* exist, whereas none of their *down* counterparts are attested.

The numerical superiority of *up*-VPNs over *down*-VPNs could be explained from the viewpoint of the degree of semantic bleaching. By applying insights by Otani (2015) introduced in Section 2.7. to the present issue, the following explanation can be obtained. The particle *up* has undergone semantic bleaching to a considerable extent so that its upward sense has been diluted and many metaphoric meanings have arisen. Hence, it can combine with a number of different verbs. In contrast, the particle *down* has been subjected to semantic bleaching to a limited degree and therefore appreciably conserves the downward sense. Since this downward sense requires a verb to be compatible with the downward orientation, the relatively small number of *down*-VPNs can be formed.

The second asymmetry observed in the collected data is that *down*-VPNs made of verbs that indicate the downward orientation are unlikely to have the corresponding *up*-VPNs. For instance, the verbs that are related to a physical decrease in vertical elevation or an action in the downward direction such as *drop*, *fall*, and *tumble* unite with *down* to form *drop(-)down*, *fall-down*, and *tumble(-)down*. Nevertheless, they do not connect with *up* to form *up*-VPNs. In addition to that, the verbs that denote a reduction in temperature such as *chill* and *cool* combine with *down* to form *chilldown* and *cool(-)down*, but never connect with *up* to become *up*-VPNs.

The reason behind the lack of the corresponding *up*-VPNs may be explained in terms of the semantic collision between the downward orientation implied by the above-mentioned verbs and the upward orientation inherent in the particle *up*. The verbs mentioned above depicts a scene in which some object moves toward a point that is physically lower than where it used to be or the temperature of something decreases. In contrast to these downward implications, the particle *up* causes a sensation of a physical increase in vertical elevation, an increase of something in an abstract scale such as the rise in temperature, or numerous other events associated with the upward orientation either in the spatial or in somewhat abstract ways. Since the fusion of the two semantically conflicting elements is usually difficult in the creation of words, it is reasonable to deduce that the verbs that evoke a sense of downward orientation are unlikely to connect with *up* to form *up*-VPNs.

The above-mentioned two types of verbs indicating either the upward or the downward orientation tend to have only one of *up*- and *down*-VPCs. To be more precise, the verbs that become *up*-VPNs but do not form *down*-VPNs tend to have *up*-VPCs but tend not to have *down*-VPCs; the verbs that become *down*-VPNs but do not form *up*-VPNs tend to have *down*-VPCs but tend not to create *up*-VPCs. For example, the verb *jack*, which possesses an internal upward sense, forms *jack-up* and *jack up*, but never produces **jack down*. To cite another example, the verb *cool*, which possesses an inherent downward sense, forms *cool(-)down* and *cool down*, but never produces **cool up*.

This tendency for the verbs possessing inherent orientations to have only one part of *up*- and *down*-VPCs will again be explained by the incompatibility of the two opposite orientations. Since *jack* indicates the ascension of some entity such as a car or the lift in some figures such as rates or prices, it would be difficult for the word to combine with *down*, which designates the downward orientation. By the same token, since *cool* engenders the impression about the abatement of temperature, the coupling of the word with *up*, which evokes the sense of upward orientation, would be problematic.

Interestingly, there are some cases in which only one of the synonymous *up*- and *down*-VPCs is converted into a VPN. For example, VPCs such as *burn up/down*, *smash up/down*, *rub up/down*, and *tear up/down* are synonymous. Among these phrasal expressions, *burn up* and *smash up* are nominalized to yield *burn-up* and *smash(-)up*, but

burn down and *smash down* are not converted into *down*-VPNs. Moreover, while *rub up* and *tear up* are not nominalized, *rub down* and *tear down* are converted into *rub(-)down* and *tear(-)down*. The mechanism behind these selections remains an open question.

4.2. [Ving(-)up/down], [Ved(-)up/down], and [Ver(-)up/down]

The previous section focused upon the nature of *up*- and *down*-VPNs. The present section turns the spotlight on the compounds with the structure [Ving(-)up/down], [Ved(-)up/down], and [Ver(-)up/down]. The existence of these nouns has already been recognized in the previous literature (Adams 2001; Bauer et al. 2013). However, their treatment has been far from sufficient on the most conservative estimates. Nonetheless, these compounds show several intriguing features, which will be explored in the following.

From the collected data, it has been revealed that the type frequency of the compounds with the structure [Ving(-)up] in COHA is 95, that of [Ving(-)down] 20, that of [Ved(-)up] 31, that of [Ved(-)down] 37, that of [Ver(-)up] five, and that of [Ver(-)down] one. The sum of hyphenated types and unhyphenated types is presented here. This is indicated by the parentheses around hyphens. The notation [Ved(-)up] and [Ved(-)down] signify the words formed by a past participle plus an optional hyphen plus *up/down*. Hence, they include the nouns whose component past participles do not end with *-ed*, such as *grown(-)up*, *wound-up*, *beaten(-)down*, and *worn-down*.

Among the four types of compounds, the type frequency of the [Ving(-)up] compounds is noticeably high. Hence, the words of this type deserve investigation. Previous studies on the nouns ending with *up*, such as Nagashima (2017), did not pay due attention to the compounds with the structure [Ving(-)up]. Her reason for dismissing this type was that the nouns with the structure [V(-)up] are numerous in number compared with the nouns of the type [Ving(-)up] (Nagashima 2017). However, she only focused on 100 most frequent nouns. When the scope of research is expanded to include not only highly frequent nouns but also infrequent ones and even one-offs, the nouns formed by a present participle plus *up* will become a significant minority that should not be shunted off to the periphery. It is true that *up*-VPNs are numerous in type frequency as well as in token frequency. Indeed, 167 types of nouns with the structure [V(-)up] are attested in COHA, which is larger than 95. However, given that this number is not much lower than 167, it can be safely said that the compounds of the type [Ving(-)up] merit further investigation.

The semantics of the [Ving(-)up] nouns is simple and transparent. It means *to V up*. There appears to be no exception to this rule. Here, *-ing* tacked to a verb does not provide any additional meaning to the verb. Rather, its role is to give the whole unit a nominal status. Considering this function of *-ing*, it may be sensible to regard the nouns of the type [Ving(-)up] as nominalizations of *V up* rather than ‘*Ving* plus *up*’.

A plenitude of the [Ving(-)*up*] type enjoys theoretical support. One concerns the amity between the functions of *-ing* form and the particle *up*. Another relates to motivation for using verb-particle constructions. These two arguments will be elaborated in the following.

The first possible account for the abundance of the [Ving(-)*up*] type is concerned with the harmony between the function of *-ing* form to describe actions or events and the event-orientation of the particle *up*. When *-ing* attaches to a verb, the resultant *Ving* denotes an action or event expressed by the verb. Meanwhile, as mentioned in Section 2.5., the particle *up* is event-oriented, meaning that it profiles the final state of the event described by a verb (Otani 2015). In conclusion, the property of *-ing* works in concord with the particle *up* in producing the nouns in [Ving(-)*up*].

Another explanation for the profuseness of the [Ving(-)*up*] nouns can be found in people's motivation for nominalizing *up*-VPCs. When people try to describe a particular event, they hunt for the exact phrase that seems to fit the tone. During this process, they make a selection between two synonymous expressions: a simple word or a verb-particle construction. The difference between verb-particle constructions and their corresponding one-word synonyms lies in the impression that they give rather than the semantic information that they provide. According to Nieda (2006), verb-particle constructions are particularly suitable for describing a situation vividly and dynamically. They make readers or listeners feel as if they were on the scene depicted and provide a lively feeling which would otherwise never be conveyed if one-word verbs were used instead to describe the same event. On account of this nature, verb-particle constructions are chosen more frequently in colloquial language than their one-word equivalents, which are used to report an event statically and are not designed to evoke a vibrant mental image as their synonymous counterparts in the form of the verb-particle construction do (Nieda 2006). Through the iterative and repetitive experiences of wanting to describe an event dynamically by employing a verb-particle construction, and yet the syntax of the sentence imposing a restriction that it must manifest itself in the guise of a noun, a handsome incentive to nominalize verb-particle constructions must have been furnished.

The type frequency of [Ving(-)*down*] nouns is 20, which is much smaller than that of [Ving(-)*up*] nouns. The reason for the relative infrequency of the [Ving(-)*down*] type might be explained in terms of the discord between *-ing* and the patient-orientation of *down*. The nominalizing function of *-ing* is event-oriented and therefore does not have a predilection for patient-oriented *down*.

The type frequencies of [Ved(-)*up*] nouns and [Ved(-)*down*] nouns are almost the same. Thirty-one types of [Ved(-)*up*] nouns and 37 types of [Ved(-)*down*] nouns are attested in COHA. The reason behind the practically same number of occurrences remains unresolved. However, the slight preponderance of [Ved(-)*down*] over [Ved(-)*up*] may be explained from the viewpoint of the harmony between the patient-orientation of past

participles and that of the particle *down*. A past participle is the form of a verb in the passive voice, which gives prominence to the patient in a sentence. Therefore, people associate past participles with a focus on the patient. In this sense, past participles are patient-oriented. Thus, they have a close affinity with each other, resulting in slight numerical superiority of [Ved(-)*down*] to [Ved(-)*up*].

Similarly to [Ving(-)*up*] nouns, the meanings of [Ved(-)*up*] nouns and [Ved(-)*down*] are clear and easy to predict. They mean *to be Ved up* or *to be Ved down*. In both cases, the meanings of VPCs remain intact. Hence, it may be more appropriate to regard these types as past participles of *V up* and *V down* rather than to think of them to be ‘a past participle of a verb + *up/down*’.

The last types of nouns that deserve attention are the nouns with the structure [Ver(-)*up*] and [Ver(-)*down*]. The [Ver(-)*up*] nouns have as many as 28 types in COHA:

backer-up, builder-up, cheerer-up, cleaner-up, cutter-up, drinker-up, eater-up, fixer-up, getter(-)up, harnesser-up, lifter-up, makerup, mopper-up, runner(-)up, piler-up, putter-up, setter-up, sitter-up, snapper-up, speeder-up, stander-up, stirrer-up, sucker-up, thinker-up, toucher-up, vampper-up, waker(-)up, and whooper-up.

As opposed to that, the [Ver(-)*down*] nouns have only 7 types: *breaker-down, hander-down, hunter-down, knocker(-)down, layer(-)down, puller-down, and taker-down*. What follows are the excerpts from COHA that describe how these words are used.

- (4) After considering him attentively, I recognized in him a diligent *getter-up* of miscellaneous works, which bustled off well with the trade.
- (5) This soldier has told the stories with new emphasis, and will be a memorable *hander-down* of fame to posterity.

As may be expected from the examples above, the meanings of these nouns are fairly explicit. They roughly mean ‘a person or thing that *V (something) up/down*’. For example, a *getter(-)up* is a person who *gets something up*. *Hander-down* is a person who *hands something down*. Hence, it is reasonable to think that *-er* is not attached to the verb but affixed to the whole unit of *V up/down*.

The difference in the number of occurrences may be explained from the perspective of the affinity of *-er* for each particle. The suffix *-er* prototypically denotes the agent. Through the semantic extension mechanisms of metaphor and metonymy, it has developed the sense of instrument, cause, object, and event (Booij 2010b). Importantly, however, there seem to be few examples in English where *-er* works as the marker of the patient. As a consequence, the coexistence of *-er* and *down* would be undesirable, leading to a few instances of the type [Ver(-)*down*].

4.3. The compounds of the type [N(-)up/down]

This section aims to disclose the characteristics of compounds with the structure [N(-)up/down]. First, the examples of these nouns along with example sentences will be presented. Then, the meanings of these nouns will be specified from the observation of these examples. Lastly, the constructional schemas that capture these nouns will be proposed.

The following table shows the nouns found in COHA which have both [N(-)up] and [N(-)down] types.

Table 2: The compounds of the [N(-)up] and [N(-)down] types sharing the same noun attested in COHA

	[Ndown]	freq.	[N-down]	freq.	[Nup]	freq.	[N-up]	freq.
1	[SUNDOWN]	1332			[SUNUP]	200	[SUN-UP]	159
2	[FACEDOWN]	186	[FACE-DOWN]	63	[FACEUP]	27	[FACE-UP]	27
3	[HEADDOWN]	3	[HEAD-DOWN]	17			[HEAD-UP]	11
4	[PALM-DOWN]	3					[PALM-UP]	7
5	[EDGE-DOWN]	2					[EDGE-UP]	1
6	[BELLYDOWN]	1	[BELLY-DOWN]	7	[BELLYUP]	2	[BELLY-UP]	44
7	[FEET-DOWN]	1					[FEET-UP]	4
8	[KNEES-DOWN]	1					[KNEES-UP]	1
9	[NOSEDOWN]	1	[NOSE-DOWN]	4			[NOSE-UP]	2
10	[THUMBSDOWN]	1	[THUMBS-DOWN]	10	[THUMBSUP]	1	[THUMBS-UP]	123
11			[HANDS-DOWN]	3			[HANDS-UP]	2

It would be immediately recognized from the table that the nouns in these compounds almost always represent parts of a human body: *head, palm, nose, knees, hands, feet, belly, and thumbs*. The few exceptions to this trend are the occurrences of *sun* and *edge*. Below are the excerpts from COHA which illustrate how the nouns with the structure [N(-)up] and [N(-)down] are used in the context.

- (6) She gave him the *thumbs-up* sign, which he returned with a smile.
- (7) After being heated to cherry red, the blade must be immersed in brine *edge-down*, with the blade exactly perpendicular to the surface of the brine.
- (8) A product designed to usher in the next era in convenience shopping went *belly-up* earlier this month when McDonald's cancelled its year-long experiment with the Redbox kiosk, an automated convenience store, reports the Washington Post.

An important feature concerning the compounds of the type [N(-)up/down] can be discerned from the examples illustrated above. The compounds of the type [N(-)up/down] function as an adjective or an adverb in a sentence and describe the state of a certain

nominal in the sentence. For example, in the sentence (6), *thumbs-up* works as an attributive adjective and specifies that the type of sign that *she* gave was such that her thumbs pointed upward. In sentence (7), *edge-down* functions as an adverb and stipulates that the blade should be immersed in brine in a way that its edge will be in a lower position than its spine and not the other way around. Some words in Table 2 form idiomatic expressions. According to OED, *go belly-up* means to go “into a situation of having failed (esp. financially), died, finished, or become defunct” (OED: 2006). This way of usage can be observed in the sentence (8).

The observation of the sentences including [N(-)*up/down*] compounds in COHA would lead to the following specification of the semantics of these compounds. The compounds of the type [N(-)*up*] generally indicate that the noun denoted by N is pointing upward or in a physically higher position than something/someone. Conversely, the compounds of the type [N(-)*down*] for the most part mean that the noun denoted by N is pointing downward or in a physically lower position than something/someone. Thus, the meaning of [N(-)*up*] is opposite to that of [N(-)*down*] in the sense that replacing *up* with *down* yields the interpretation of N pointing the opposite direction or being in a spatially contrastive position. The few exceptions to these interpretations are *sundown*, which designates “the time in the evening when the sun disappears or daylight fades” (OED: 2018), and *sun(-)up*, which signifies “the time in the morning when the sun appears or full daylight arrives” (OED: 2018).

Based on the observation above, it is reasonable to propose the following constructional schemas of compounds of the type [N(-)*up*] and [N(-)*down*] where N is a noun denoting a body part:

- [[X]_{N(-)up}]_{Adj/Adv} ‘the state of X of a person/thing pointing upward or in a physically higher position than something/someone’
- [[X]_{N(-)down}]_{Adj/Adv} ‘the state of X of a person/thing pointing downward or in a physically lower position than something/someone’

The constructions above signify that the forms on the left are linked to the meaning on the right. The notation ‘Adj/Adv’ means that the unit will have the status of either an adjective or an adverb depending on what noun comes into X.

There is enough evidence to make the case that these form-meaning pairs are qualified to be called constructions. Indeed, the linguistic expression [[X]_{N(-)up}] meets the criterion of idiosyncratic constraints (Hilpert 2019). This assessment is justifiable because the expression places an idiosyncratic constraint on the interpretation of the meaning of the unit as a whole: although ‘an action or a motion of X of a person/thing moving upward’ may be a possible interpretation that could be made by combining the meanings of its elements, the expression [[X]_{N(-)up}] always denotes a STATE of X.

Based on this consideration, it is fairly reasonable to claim that the form $[[X]_N(-)up]$ paired with the meaning on the right has the status of the construction. By the same token, the form $[[X]_N(-)down]$ with the meaning stipulated above may reasonably be judged to have the status of the construction.

Although it has been claimed that the form $[[X]_N(-)up]_{Adj/Adv}$ is paired with the meaning ‘the state of X of a person/thing pointing upward or in a physically higher position than something/someone’, it is not necessarily the sole meaning to which $[[X]_N(-)up]_{Adj/Adv}$ is tied. In other words, the form can be coupled with more than one meaning. For instance, OED lists two meanings for *head-up*. One is the interpretation specified above. The other sense is defined in OED as “Of instrument readings in an aircraft, vehicle, etc.: shown so as to be visible without lowering one's eyes from the view ahead, typically through being projected on to the windscreen or visor; using or containing such a display” (OED: 2013). The following excerpts from COHA illustrate how this *head-up* is used in context:

- (9) The U.S. Air Force installs holographic *head-up* displays in fighter jets, bringing aviators 3-D images of battlespace positions.

Head-up in this sentence does not convey that the head of displays is pointing upward or is in a physically high position. Rather, the word points to the manner in which people see those displays. This interpretation could not be made based on the above construction alone. However, this fact does not militate against the proposed constructional schemas. The second sense of *head-up* just implies that there are some meanings that cannot be captured by the above schemas alone. It does not cast doubt upon the validity of the schemas proposed above.

Interestingly, if the N of a $[N(-)up]$ compound has nothing to do with parts of a human body, the meanings of the compound will highly be unpredictable. For instance, *ball-up* means “a method of starting or restarting play (as at the beginning of a quarter, after a goal has been scored, or following certain penalties) in which the ball is thrown (or bounced) into the air by the umpire and players on opposing teams attempt to gain possession” (OED: 2008). In contrast to $[N(-)up]$ with N being a body part, *ball-up* denotes an ACTION of throwing a ball upward. Replacing *ball* with its plural form *balls* yields a totally different result. *Balls-up*, a slang chiefly used in British, means “a fiasco, a disaster; a mess, a muddle” (OED: 2008). It appears that *up* in this case means something other than direction, orientation, or a position in the space.

4.4. VPNs as an intersection of lexical categories

4.4.1. The adjectival status of VPNs

Previous studies of VPNs did not distinguish hyphenated VPNs from unhyphenated ones. However, hyphenation may affect the grammatical status of VPNs. The relation between hyphenation and the adjectival status of VPNs along with some peculiar usage of hyphenation attested in the corpus will be presented.

Three pairs of *up*-VPNs whose hyphenated and unhyphenated versions are both attested more than 400 times have been selected from Table 1. The three pairs are *set(-)up*, *close(-)up*, and *hold(-)up*. Then, one hundred examples have randomly been chosen for each type and the number of instances in which they are used as attributive adjectives has been counted. Similarly, three pairs of *down*-VPNs whose hyphenated and unhyphenated versions are both attested more than 80 times have been selected from Table 1. The three pairs are *break(-)down*, *show(-)down*, and *let(-)down*. Then, one hundred examples from *breakdown*, *showdown*, and *letdown* have randomly been chosen. These 300 examples and all examples of *break-down*, *show-down*, and *let-down* have been manually checked and the number of instances in which they are used as attributive adjectives has been counted. The following table shows the results of the investigation.

Table 3: Hyphenated and unhyphenated VPNs and their frequency of adjectival usage

[Vup]	adj. / total (%)	[V-up]	adj. / total (%)	[Vdown]	adj. / total (%)	[V-down]	Adj. / total (%)
setup	4 / 100 (4 %)	set-up	8 / 100 (8 %)	breakdown	1 / 100 (1 %)	break-down	4 / 104 (3.8 %)
closeup	4 / 100 (4 %)	close-up	0 / 100 (0 %)	showdown	5 / 100 (5 %)	show-down	2 / 108 (1.9 %)
holdup	21 / 100 (21 %)	hold-up	24 / 100 (24 %)	letdown	4 / 100 (4 %)	let-down	14 / 83 (16.9 %)

Overall, no significant difference can be observed in the table. No generalization seems to be possible. However, it could be argued that the disparity in the percentage of the adjectival use is conspicuous in the pair *letdown* vs. *let-down*, and somewhat large in the pair *setup* vs. *set-up*. What these two pairs have in common is that the verbs in these VPNs have the same form as their past participles. Based on this observation, examples of some other VPNs that contain such type of verbs have been investigated. The results are shown in Table 4.

Table 4: Hyphenated and unhyphenated VPNs whose verbs have the same form as their past participles and their frequency of adjectival usage

[Vup/down]	adj. / total (%)	[V-up/down]	adj. / total (%)
cutup	2 / 21 (9.5 %)	cut-up	49 / 84 (58.3 %)
letdown	4 / 100 (4 %)	let-down	14 / 83 (16.9 %)
letup	0 / 76 (0 %)	let-up	1 / 97 (1.0 %)
putdown	0 / 37 (0 %)	put-down	3 / 70 (4.3 %)
rundown	14 / 159 (8.8 %)	run-down	48 / 77 (62.3 %)
runup	0 / 12 (0 %)	run-up	4 / 114 (3.5 %)
setup	4 / 100 (4 %)	set-up	8 / 100 (8 %)

The tendency for some of the compounds of the type [V-up/down] to be more likely to work as attributive adjectives than the compounds with the structure [Vup/down] may be explained from the viewpoint of the people's ability for finding an analogy between [V-up/down] and compound adjectives in which hyphens appear and their incentive for making use of hyphenation in producing words that they want readers to recognize as adjectives. English has a considerable number of compound adjectives. For instance, Nishibu (2013) has conducted intensive corpus-based research on compound adjectives and reports that adjectives such as *x-year-old*, *x-year*, *x-century*, *long-term*, *short-term*, *so-called*, and *x-day*, where *x* denotes a numeral or an ordinal, are highly frequent in present-day English. Through the experience of repeatedly being exposed to hyphenated adjectives, the connection between hyphenation and the adjectival status becomes more and more strengthened in the minds of people. After the inner repository for those adjectives becoming fairly rich, people start to use hyphenation so that the words that they intend readers to recognize as adjectives will properly be perceived as such.

This active and creative use of hyphenation has been confirmed by a number of researchers. Hilpert (2019), for example, maintains in the discussion on Construction Morphology that phrasal compounds such as *a what-the-heck-is-wrong-with-you look*, *a Nietzschean god-is-dead approach to life*, and *a show-me-the-money grin* are used in English. These hyphenated words function as attributive adjectives. Moreover, Nishibu (2013) suggests that the hyphens in words such as *in-house*, *in-service*, and *in-depth* have been inserted into them in order to gain the ability to modify nominals, corroborating the view presented by this paper. Given that hyphenation is used fairly creatively and productively to form words or phrases with an adjectival status, it could be suggested that people consciously or unconsciously avail themselves of hyphenation by analogy with existing hyphenated adjectives stored in their minds when they want a particular VPN that they deliver to be appropriately perceived as an adjective.

In this section, I demonstrated that some VPNs (i.e., those that contain verbs such as *cut*, *let*, *put*, *run*, and *set*) are frequently used as attributive adjectives when they occur with hyphens. People's association of hyphenation with the adjectival status was also explained. However, it is still an open question why this association develops only partially and does not hold across the board. Further investigations on the adjectival status of VPNs and hyphenation is necessary.

4.4.2. The verbal status of VPNs

In addition to the adjectival use of VPNs, the verbal use of VPNs has been observed in the corpus. Below are some of the examples in which VPNs appear to function as verbal phrases.

- (10) Maui is the Polynesian god of the ancient days. He concluded, as did Ta-wats, that the days were too short. He wanted the sun to *slow-up*, but it would not.
- (11) I felt the privation so seriously, and my curiosity had been so highly stimulated, that I could no longer keep within the house, and actually sallied forth, on the wild-goose chase of *looking-up* the fugitives in such a city as New York.
- (12) There was but one thing more to be done before *winding-up* summarily an affair that had been to her vexatious from the beginning.
- (13) Remember to *top-up* the Dewar from time to time.

What these examples demonstrate is that VPNs are sometimes used as verbal phrases. The verbal character of VPNs has been reported by other researchers as well. Adams (2001) says that the phrasal character of ‘deverbal noun + particle’ formations is especially obvious in non-count use and in the case where they denote an instance of the verb’s action following ‘*have/give/take a*’.

4.4.3. Interim summary

This section began by exploring the adjectival status of *up-* and *down-*VPNs and its correlation with hyphenation. Then the verbal use of these VPNs in COHA were presented. These observations lead us to the following two propositions. First, hyphenated VPNs and non-hyphenated VPNs may not be mere spelling variations. Rather, the existence of a hyphen may largely be a function of the meaning and the role of the VPN in a sentence. What underlies this phenomenon may be people’s motivation for delivering VPNs in a particular way. That is to say, people may decide consciously or subconsciously whether to use a hyphen or not depending on how they want a VPN to function in a particular syntactic environment. The other implication of the investigation is that the VPNs’ status as nouns is considerably vague and nebulous. Bauer (2005: 25) said, “lexical categories are not neat little boxes, each well-defined and without overlap; they are conflicting and fluctuating norms with a set of expected but not necessarily obligatory features.” The indefinite nature of VPNs in their grammatical status implies that the notion of lexical categories should not be seen as rigid as it is in the study of words and phrases.

5. Concluding remarks

The present article has revealed a substantial number of structural and semantic features of the nouns ending in *up* and *down*. First, symmetrical patterns concerning these nouns have been explored. It has been articulated that non-specification of a particular direction is a common property of the verbs shared both by *up-* and *down-*VPNs. This proposition has received theoretical support from the viewpoint of the semantic collision between verbs and particles. Moreover, the semantic contribution of *up* and *down* to these verbs

have been elucidated. Importantly, in many of the cases, neither *up* nor *down* is the opposite of the other in the sense that replacing one with the other would not yield the opposite meaning. Second, asymmetrical patterns concerning these nouns have been investigated. It has been claimed that specification of a particular orientation is one of the features of the verbs that form only one of *up*- and *down*-VPNs. It has been proposed that the semantic clash is a cause of the absence of the other part of *up*- and *down*-VPNs. Subsequently, hitherto downplayed nouns with the structure [Ving-*up/down*], [Ved(-)*up/down*], and [Ver(-)*up/down*] have been given attention. Their frequency and real structure have been analyzed and people's motivation for producing these bizarre nouns has been proposed. Furthermore, the semantics of the compounds of the type [N(-)*up/down*] where N names a body part has been elaborated. In this case, both *up* and *down* are opposite to the other in the sense that replacing one with the other would generate the opposite interpretation. The elusive nature of VPNs with respect to their grammatical status has been explored in the last section. It has been pointed out that their vacillating grammatical status is related to the use of hyphenation.

This paper has aimed to delineate the structural and semantic features of the nouns ending in *up* and *down*, to propose the rationale behind symmetrical and asymmetrical patterns that these compounds exhibit, and by so doing to clarify how people's perception of the world and their various motivations influence the formation of words and phrases. This purpose has yet to be fully achieved, however. More investigations on the interplay between verbs and particles and on symmetrical and asymmetrical patterns pertaining to it are imperative.

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