

COMPOSITIONALITY AND SYSTEMATICITY IN ENGLISH PHRASAL VERBS

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1. INTRODUCTION.

Phrasal verbs – complex verbs that draw their meaning from a verb paired with a spatial particle – may be second nature to native English speakers, but their cross-linguistic sparsity makes them a unique and often poorly understood phenomenon. Due to their rarity across the world’s languages and the frequently unclear contribution of the particle to the verb’s meaning, they often present a significant challenge to English learners (Gardner & Davies, 2007) and can be difficult to accurately parse through Natural Language Processing and machine learning (Li et al., 2003). Phrasal verbs are typically broken into two categories: “compositional” phrasal verbs (e.g. *tip over* or *take off*) where the contribution of the meaning of both the verb and particle are clear, and “lexical” phrasal verbs (e.g. *clean up* or *polish off*) where the connections between the individual components and the resultant phrasal verb are unclear. Verbs of this second class are typically understood to be idiomatic, and the common assumption is that they lack the compositionality of the first class (Thim, 2012). However, through a deeper understanding of the ties between language and spatial cognition, this assumption can be challenged. I collected and analyzed common phrasal verbs from three phrasal verb dictionaries to determine the contributions of their spatial particles. I limited my search to verbs that use two pairs of antonymic particles – *on/off* and *in/out* – to further display the connections between these particles and their central senses and origins as prepositions. I created networks for each particle mapping out the variety of ways these particles can augment the verb, and using cognitive frameworks like image schema theory and conceptual metaphor theory, I elaborated on the logic behind their meanings within phrasal verbs. Through this analysis I demonstrate that *all* phrasal verbs are compositional and that the meaning contributed by their particles is systematic, even those typically considered fully idiomatic. Though this research is specific to the English language, it helps elucidate unconventional and abstract uses of prepositions and spatial terms more generally in a diverse array of languages. This particle-first categorical methodology may also present a solution to difficulties in the traditional instruction of phrasal verbs in ESL classrooms and could potentially be used as an aid to NLP as well.

2. BACKGROUND

2.1. WHAT ARE PHRASAL VERBS?

Before discussing how the underlying meanings of phrasal verbs (PVs) can be identified through the various senses of their spatial particles, it is important to clarify what they are in the first place. While verbs that take prepositional phrases as complements or arguments are fairly common cross-linguistically, PVs present a much rarer usage of these spatial terms as part of the verb complex. They do not behave as prepositions in PVs at all and instead should be considered

particles, which is why PVs are sometimes called particle verbs (Rodriguez-Puente, 2009). They are an obligatory part of the verb complex, and their removal completely changes the meaning of the verb phrase. While uncommon, this type of verb is not unique to English. The other West Germanic languages, like Dutch and German, contain a class of verbs called separable verbs that are similarly constructed by combining a verb with a spatial particle:

- (1) Ich **suche** mein Handy.
 I look-for my cellphone
I am looking for my cellphone.
- (2) Ich **suche** die Wohnung **durch**.
 I look-for the apartment through
I am searching the apartment.

The German *suchen* – “to look for” when combined with the particle *durch* (“through”) forms *durchsuchen* – “to search (a location).” In the infinitive, the spatial term of the verb complex is attached to the start of the verb, and it is broken off and displaced to the final position of the clause when the verb is conjugated. The origin of PVs in English is clear when looking at the evolution of the English language. In both Middle and Old English, these verbs looked much more like their Dutch and German counterparts, only becoming what they are today after significant French influence following the Norman Conquest and subsequent divergence between English and the other West Germanic Languages (Algeo & Pyles, 2005).

This process in German of displacing the spatial term to the end of the clause hints at one of the tests we can use to determine whether a verb is *really* a PV or just a verb with a prepositional complement. Transitive PVs allow displacement of the particle. It can be located either directly after the verb or directly after the direct object. If the object is a pronoun, the particle *must* follow it in order for the construction to be grammatical. The following examples demonstrate that *turn (something) on* is a PV, while *rely on (someone)* is not:

- (3) *I turned on the light/the light on.*
I turned it on.
 **I turned on it.*
- (4) *She relies on me.*
 **She relies me on.*

Intransitive PVs should be simple enough to verify; as they do not have objects, there is no confusion over whether the object in a given sentence is the object of the verb or preposition. In more ambiguous cases, topicalization of the spatial term can be used to determine constituency:

- (5) *John shut up.*
 **Up John shut.*
- (6) *I wrote at the desk.*
At the desk is where I wrote.

Because *up* cannot be fronted, *shut up* must be a PV. In (6), *at the desk* can be fronted because it is a constituent, and *write at* is not a PV. That said, because intransitive PVs lack a direct object

and therefore any movement of the particle, some researchers have questioned whether they are really the same thing. In English, “quite a number of words (e.g. *about, by, down, in, off, on, over, through, under, up*) can be analyzed as either an adverb or a spatial preposition, given that word class boundaries are notoriously fuzzy in English in the absence of any morphological marking” (Schneider, 2004, p. 230). Fronting can be used again to test this:

(7) *Thanks for **stopping by**.*

***By** is how/where he **stopped**.

If *by* were just an adverb in the above example, it should be able to be fronted (e.g. *Quickly is how he ran*). Because it is obligatory to the verb complex, it must be a PV. The semantic content is also important to consider here. *To stop* and *to stop by* mean completely different things. While the contribution of the verb *stop* to the PV may be clear, these two verbs are distinct. The PV’s meaning is compositional; semantic information is contributed by both the verb and the particle. It is likewise systematic, as multiple PVs use this particle synonymously to this construction (e.g. *drop by, pass by*). The spatial term contributes a sense that the verb is tethered to a set location. These grammatical tests can be useful in classifying PVs, but it is ultimately in their semantics that their differences from regular verbs are starkest. In fact, it seems likely that the semantic unity of the two words in PVs is the underlying cause of these syntactic restrictions.

2.2. TRADITIONAL VIEWS ON PHRASAL VERBS.

Generally speaking, most of the focus in mainstream linguistic research on PVs has been on their syntactic properties (Dixon, 1981; Kiativutikul & Phoocharoensil, 2014; Tawfeeq, 2023), and their semantics within traditional, syntax-driven research has been largely neglected. The popular view holds that PVs can be grouped into two (and sometimes three) very broad semantic categories based on how easily their meanings can be determined as a sum of their parts. First are PVs like *put on* in (8) that are considered “compositional” under this point of view, but I will refer to these types of semantically compositional PVs as semantically “transparent” from this point onward.

(8) *I **put** the sweater **on**.*

The sense meaning of verbs like this should be readily apparent to anyone with a baseline understanding of the verb *to put* and the preposition *on*. These transparent PVs contrast with the second category of PVs, typically described in the literature as fully “idiomatic.”

(9) *Can you **knock it off** already?*

Idiomatic PVs like *knock off* in (9) are considered semantically “frozen.” While they *may* still be compositional, this view holds that it is difficult to impossible to actually determine *how* they are compositional (Thim, 2012). Finally, some researchers have identified what they consider to be a third category of PVs: those that are “redundant” like *finish off*, where the particle does not seem to add anything to the base verb (Rodriguez-Puente, 2009). Others take the position that in these cases, the particle can act as an intensifier, directional, or other aspectual marker on the verb (Machonis, 2009).

2.3. THE COGNITIVE PERSPECTIVE.

While there have been some studies into the semantic properties of PVs that support the popular position on them, this topic is almost all but reserved to cognitive linguistic research (Condon, 2008; Dirven, 2001; Dixon, 1982; Mahpeykar & Tyler, 2015; White, 2012; Yasuda, 2010). Spatial terms are common topics in cognitive linguistic studies, and this is due to the concept of embodiment – that language use is not incidental, and that patterns in language use are informed by our own experience as physical entities moving through and interacting with the physical world around us (Lakoff, 1987). Prepositions in particular are a rich ground for study due to their highly polysemous nature and often figurative uses. Brugman (1988) as well as Tyler & Evans (2001)'s analysis of the polysemy of *over* demonstrates the utility of cognitive frameworks like image schema when discussing the various senses of a preposition. While their focus is not on PVs, their arguments help explain these more figurative and abstract senses of the preposition, and in many cases, the meaning contributed by the particle in the PV is similarly abstract. Given that prepositions are at their core spatial terms, it stands to reason that these figurative senses may be understood through spatial associations.

The idea that all PVs are compositional is also supported by cognitive research on PVs. Mahpeykar & Tyler (2015) center a similar premise to this paper, though their focus is more on how multiple meanings of the base verb contribute to the PVs *get up*, *take up*, *get out*, and *take out*. They chart the polysemy of the verbs and the particles and use this analysis to inform their discussion on their verbs. Using corpus data from the Corpus of Contemporary American English (COCA) to locate the contexts these PVs are found in and study their polysemy, they found strong support for compositionality in PVs. They are able to demonstrate meaning contributed by both the verb and particle in these four PVs, both in their literal and abstract senses. Machonis (2009) also focuses on compositional meaning, though from the mainstream perspective. Though he still holds that some are strictly idiomatic and therefore frozen, he does tackle the problem presented by so-called redundant PVs – those like *drink up* – that retain the same basic sense without the particle. In this set of verbs, they identify *up* as contributing information on direction, completed aspect, and intensity. While they do not analyze more abstract PVs, this study still pushes against the traditional perspective on PVs and supports a greater level of compositionality and systematicity than is typically assumed.

2.3.1. IMAGE SCHEMAS.

Image schema theory, first proposed by Lakoff (1987) and Johnson (1987), provides one way of doing this. This theory draws from a similar understanding of language to that of semantic primitives, supposed linguistic universals that should theoretically be found in all human languages (Wierzbicka, 2021). Image schema theory takes a deeper look behind semantic processes and proposes image schemas as a “recurring dynamic pattern of our perceptual interactions and motor programs that gives coherence and structure to our experience.” (Johnson, 1987, p. xiv). These image schemas are preconceptual structures, and our understanding of them is therefore subconscious. The theory posits that they are embodied and arise from our physical movement and our interaction with and perception of objects in physical space. They are highly

abstract, and as the name implies, *schematic* structures rather than “fully detailed [structures]... that organize what can be perceived and visualized” (Lakoff, 1987, p. 453). Finally, they are highly flexible and undergo transformations to inform different experiential contexts (Hampe, 2005). This theory can help explain the semantics of PVs and can provide a clear and straightforward methodology to our analysis of them. This would furthermore support the idea that PVs are indeed conceptually motivated and not just fossilized idioms.

2.3.2. CONCEPTUAL METAPHOR THEORY.

Lakoff & Johnson (2003) provide the basis for another cognitive framework that can help explain the conceptual motivations behind PVs. Conceptual metaphor theory suggests that our understanding of many abstract ideas and complex structures is framed by our understanding of more literal and easily comprehensible concepts and phenomena. Take, for instance, the metaphor ANGER IS HEAT. Here, *heat* is referred to as the source domain and *anger* the target domain, as our understanding of *anger* draws from our understanding of the physical sensation of heat. This is reflected heavily in our language use:

(10) *He makes my blood boil.*

(11) *I'm steaming mad.*

(12) *I'm seething with anger.*

This metaphor is not unique to English and is in fact incredibly common cross-linguistically (Kövecses, 2010). Like with image schema, conceptual metaphors are often embodied and dependent on our experience with and perception of the physical world. ANGER IS HEAT has some biological basis, as anger can cause body temperature to rise and the face to flush. Other common and fundamental conceptual metaphors, like LIFE IS A JOURNEY, may help explain the internal motivations behind some PVs when image schemas are not sufficient. Though this paper relies primarily on image schemas, conceptual metaphor theory is relevant to some senses of the particles in this study and provides extra support to others.

3. METHODOLOGY.

For this study, I compiled lists of PVs using *on*, *off*, *in* and *out* using three reference books: *The McGraw-Hill Phrasal Verb Dictionary*, the *Oxford Phrasal Verbs Dictionary for Learners of English*, and the *Longman Phrasal Verb Dictionary*. After applying the particle movement, pronoun, and fronting tests to verify the verbs' status as PVs, I grouped them by similarities in meaning to determine the general senses of the participating particles. To clarify, my study is on polysemy in the *particles* used in these PVs and not polysemy of the PVs themselves. Drawn from studies like Brugman (1988) and Tyler & Evans (2001), I created polysemy networks to map out the connections between these senses and to the central sense of each preposition.

These studies both rely on image schemas to demonstrate the conceptual motivations behind the various senses of the preposition *over*. They also make use of the figure-ground framework, first proposed in Talmy (1978). This refers to the relationship between objects that are “conceptually moveable” (p. 418) – the figure – and their static reference point – the ground.

Figure-ground relationships help explain why we use spatial terms in the ways that we use them. For instance, in a sentence like *the bike is by the house*, the bike is the figure and it is spatially located in relation to the house. The two cannot be reversed, as in *the house is by the bike*, because the bike is conceptually moveable and the house is much less so. As with Brugman (1988) and Tyler & Evans (2001), I analyzed the senses of the particles through their activation of image schemas to better conceptualize them and made use of figure-ground to help demonstrate how these senses are used. I also used conceptual metaphor theory to explain particle meaning where it is applicable, such as in many of their more idiomatic senses.

In outlining the senses of these spatial terms, I chose to adhere to broader categories of meaning to avoid making unnecessary distinctions, though the significant degree of polysemy in these particles ultimately warranted a greater degree of specificity in some cases. Tyler & Evans (2001) argue that the senses Brugman (1988) locates are often too specific and do not adequately distinguish and account for the information coded by the particle itself and the information that must be derived from the greater contexts in which *over* is used. This point is important to consider, and I attempted to classify the particles' senses in broader terms to eliminate influence from the verbs they are used with.

I focused on the particles *on*, *off*, *in*, and *out* for a few reasons. I restricted my scope to these to provide a deeper analysis of a few particles rather than a shallow analysis of all the particles in English PVs. I used two pairs of antonymic particles because the contrast between *on* & *off* and *in* & *out* should be reflected in their various senses. I assumed they would generally be as permissive as each other in what constructions they allow well. I additionally chose these pairs due to the similarities in the image schemas they activate. While certainly not identical, there is evidently a lot of overlap between *in* and *on* and between *off* and *out*.

In my analysis, I will first delineate the senses of *on* and *off* when used as particles in PVs, followed by the senses of *in* and *out*. I will start by explaining the central sense of these spatial terms when used *as prepositions* in order to demonstrate that their uses as particles are derived from their use as prepositions. From there, I will go through their senses as particles. I have additionally created schematic representations of each sense that will go alongside their sections (Figures 1-23).

4. DATA PRESENTATION AND ANALYSIS.

In total, I located 57 *on* PVs, 129 *off* PVs, 95 *in* PVs, and 210 *out* PVs. I have divided my analysis into four sections, one for each of the particles in this study. Each section is further divided into the various senses of its particle. Starting from the central sense, I move through the senses one by one, ordered loosely by their connections to each other. As mentioned, I have attempted to be conservative in my categorization and avoid unnecessary distinction, though in some cases it seemed pertinent to further catalog "sub-senses."¹ For each particle, I have

¹Tyler & Evans (2001)'s observations on the polysemy of *over* are important to keep in mind when discussing these "sub-senses." They are ultimately contained by their overarching sense rather than being distinct senses, and I argue they typically arise from their verbs' contribution to the PV.

included a table illustrating its primary senses in PVs and examples of PVs for each sense (Tables 2, 3, 5 & 6) along with a finalized polysemy network to display the connections between these senses (Diagrams 1-4). Finally, a table delineating the senses by their activation of image schemas is included before each set of antonymic particles (Tables 1 & 4).

4.1. ON AND OFF.

In Table 1, + denotes that the schema is activated by the sense, - denotes an inversion of the schema, and / denotes that the schema does not apply to the sense. Parentheses signal that the image schema is not obligatory but may be activated in some PVs that draw from the sense.

Table 1

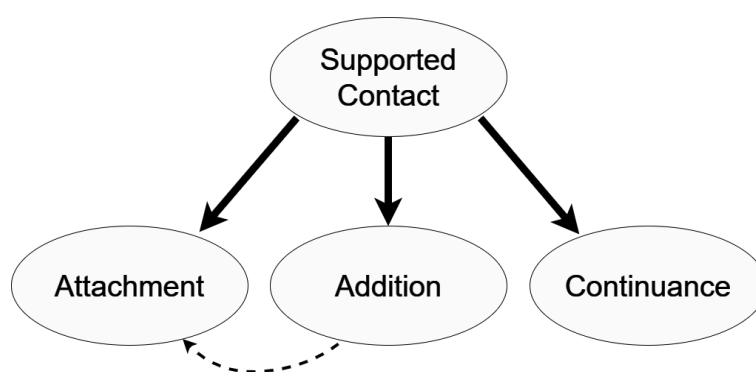
	VERTICALITY	CONTACT	SUPPORT	SOURCE	PATH	GOAL	PART-WHOLE	CENTER-PERIPHERY
On								
<i>Supported Contact</i>	+	+	+	/	/	/	/	/
<i>Addition to</i>	+	+	+	/	/	/	/	/
<i>Attachment</i>	(+)	+	+	/	/	(+)	/	/
<i>Continuance</i>	/	/	/	/	+	/	/	/
Off								
<i>Displacement</i>	-	-	-	/	/	/	/	/
<i>Removal</i>	(-)	-	-	(+)	/	/	/	/
<i>Detachment</i>	/	-	-	/	/	/	+	/
<i>Movement away</i>	/	/	/	(+)	/	/	/	+
<i>Commencement</i>	/	/	/	+	/	/	/	/
<i>Completion</i>	/	/	/	/	/	+	/	/
<i>Opposition</i>	/	/	/	/	/	/	/	+

4.1.1 POLYSEMY OF ON.

Table 2

Senses of <i>on</i>	Examples
1. Supported Contact	<i>the ball is on the table, the house is on a hill</i>

2. Addition	<i>Add on, bring on, pile on, take on, lay it on thick</i>
3. Attachment	<i>Bolt on, fasten on, clip on</i>
2a. Stasis	<i>Catch on, hang on, hold on</i>
2b. Dress	<i>Put on, have on, keep on, leave on, throw on, slip on, try on</i>
4. Continuance	<i>Bring on, carry on, come on, cheer on, drag on, drive on, egg on, go on, get on, keep on, lead on, live on, look on, move on, pass on, press on ride on ramble on, send on</i>
3a. Activation	<i>Come on, turn on, keep on, leave on, switch on, sign on, log on</i>

Diagram 1: Polysemy of *on*

4.1.1.a SUPPORTED CONTACT & ADDITION SENSES.



Fig. 1

Supported contact describes the central sense of *on* when used as a preposition. Here, *on* relays the relationship between two vertically oriented objects in physical contact with each other. An easy way of understanding this sense is through figure-ground relationships. In (13), the ball is the figure that is located in terms of its relationship to the table – the ground. In prepositional phrases, the figure may be stationary or in motion, like in (14).

(13) *The ball is on the table.*

(14) *The ball rolled on the table.*

This sense can also be understood through its activation of a few binary image schemas. The schemas active here are VERTICALITY, CONTACT, and SUPPORT.

Supported contact is all but absent from PVs, but one use of *on* as a particle does seem to be immediately derived from and conceptually close to this sense. Here, the particle contributes meaning akin to *addition*. This sense is most commonly used metaphorically, such as in sentences like (15) and (16).

(15) *The waitress **tacked on** another charge.*

(16) *They kept **piling** the insults **on**.*

In (15), a non physical figure, in this case an additional cost, is understood to be stacked on top of the ground, in this case the bill, and the same image schema as the central sense are still active.² The use in (17) demonstrates a more literal example of this sense:

(17) *The boat is **taking on** a lot of water.*

That said, the verb *take on* can still be used more figuratively in sentences like *He's taking on a lot of extra work*, which highlights this sense's preference for metaphor.

4.1.1.b ATTACHMENT.

The next broad sense that can be found in *on* PVs expresses a degree of *attachment*. Here, the VERTICALITY aspect of *on* is optional, but SUPPORT and CONTACT are maintained. The *attachment* sense is frequently found in prepositional phrases with *on* (e.g. 18 & 19), though its use with PVs is fairly common too (e.g. 20 & 21).

(18) *The painting is on the wall.*

(19) *I hung the painting on the wall.*

(20) *He **clipped** his tie on.*

(21) *They **fastened on** the lid.*

In all transitive verbs in this set, the figure object is being attached to the ground object. The use in (19) displays how this is done with non-phrasal verbs: the ground is the object of the preposition *on*. In PVs the ground is instead implied, as is the case in (20) and (21).

There are many metaphorical uses of this sense:

(22) *The idea was starting to **catch on**.*

(23) *Can you **hang/hold on** for a minute?*

The idea becoming popular in (22) is conceptualized as being fixed in place and is not able to move on. In (23), the act of waiting is thought of in the sense of the agent physically holding themselves in place.³

Also contained within the general *attachment* sense are several verbs that describe wearing clothing:

(25) *You should **put** a jacket on.*

(24) *? He wears a jacket on his body.*

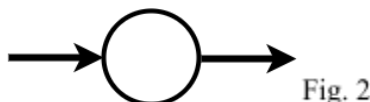
Here, the body is the ground while the articles of clothing are the figures. This sense can be found in limited cases in prepositional phrases,⁴ though it is much more commonly used in PVs. Verbs in this set are divided into those that describe the actions of dressing (*put on, throw on, try on*) and wearing (*have on, keep on*). As is true under the more general umbrella of the *attachment* sense, the ground – in this case, the body – is implied in these verbs.

² The use in (15) borrows from the conceptual metaphor that MORE IS UP (Lakoff & Johnson, 2003). This metaphor is a fairly straightforward one and easy to visualize. As more is placed on top, the stack grows in height. The sentence in (16) is further abstracted, and the insults are imagined as a pile that is growing as more are tacked on.

³ I have labeled this sub-sense *stasis*, though at its core it may be understood as *maintenance* of the SUPPORT and CONTACT image schemas. This aspect of *stasis* is contributed by the verbs used in these PVs, which take an *on* prepositional phrase as a complement when used outside of PVs (e.g. *my sleeve caught on the cupboard*).

⁴ A sentence like *he wears a jacket on his body* is possible and would be understood, but ultimately this sub-sense is much more common in PVs

4.1.1.c CONTINUANCE.



This sense includes quite a few PVs and is the first that does not make clear use of the central sense's schemas. The largest and most central group in this set is intransitive “inherently directed motion” (Levin, 1993, p. 263) verbs and *run* verbs (Levin, 1993), as in (26).

- (26) *We ran/drove/rode/walked/went on.*
 (27) *The cat kept on scratching the chair.*
 (28) *The children continued on with their game.*

The PVs in (27) and (28) demonstrate that this sense can be used to denote the continuation or perpetuation of most actions.⁵ The PATH schema is active here with no implicit end point. To understand how this sense connects to the central sense, it seems necessary to recognize a schematic transformation of VERTICALITY to a horizontal plane. Motion forward is understood as motion upward.⁶ *Continuance* is overwhelmingly the most productive sense of *on* when used in PVs, as *on* can be added to a diverse range of both transitive and intransitive verbs describing a process to imbue them with this continuative aspect.⁷

A significant number of PVs informed by this sense describe *activation*, typically of an electrical appliance. These verbs all have directly antonymic PVs that use *off*:

- (29) *Can you turn/keep/leave the light on?*
 (30) *Can you turn/keep/leave the light off?*

This usage may initially appear more abstract than the others, and its connections back to both the central sense and the *continuance* sense do not seem clear, but this can all be explained by looking at the historical usage of verbs in this set. Per the OED, *turn on* is attested as early as 1822 and originates from physically turning a faucet, wheel, etc. to activate the flow of water or gas.⁸ This elucidates how this sub-sense is contained by the *continuance* sense. In the verbs in this set, a process can be understood as being *on* (underway or caused to continue) or *off* (restrained or cause to end).⁹

4.1.2 POLYSEMY OF OFF.

⁵This is due to the conceptual metaphor ACTION IS MOTION, in which the language used to describe ongoing processes (Kövecses, 2010). This metaphor is very common, and even the word *ongoing* draws from it.

⁶There is more to this sense, although I will discuss that later when looking at the *commencement* and *completion* senses of *off*.

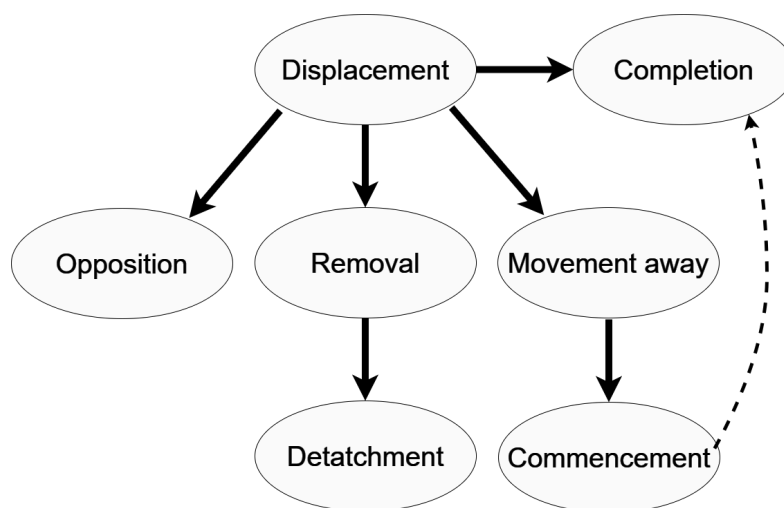
⁷In some limited contexts, it can be found in verbs that describe a progression to a subsequent stage, both in a literal and metaphorical sense as in *move on*. *Pass on* used to mean die is derived from this sense as well (as in to pass on(to the next life)). This is likely directly related to the conceptual metaphor LIFE IS A JOURNEY (Lakoff & Johnson, 2003). Experience through life is conceptualized as movement through a physical space, and our language use reflects that, as is the case here

⁸ Our understanding of the movement of electricity is often in terms of fluid motion (e.g. *electrical current*, *flow of electricity*, etc.) (Getner & Getner, 1983), so there is precedent for the more common modern usage with electricity.

⁹ A subset contained by this sense are PVs like *log on* and *sign on* that have a meaning similar to *activation*, though they describe an agent self-activating in a way. *Sign on* can be used in the sense of logging onto a website, signing up for something, or a broadcaster beginning their broadcast.

Table 3

Senses of <i>off</i>	Examples
1. Displacement	<i>The ball rolled off the table, The cat's off the table</i>
2. Removal	<i>Brush off, dry off, wash off, dust off, check off, pull off, take off, shake off, toss off, cross off, laugh off, walk (smth.) off, sleep off, blow off, write off</i>
3. Detachment	<i>Bite off, break off, chop off, hack off, cut off, rip off, rot off</i>
2a. Partition	<i>Block off, close off, rope off, cordon off, section off, tie off, round off, head (smn.) off</i>
4. Motion away	<i>Run off, drive off, screw off, ease off, run (smth) off, fight off, beat off, scare off, pay (smn.) off, sell off, see off, put off, let off, drop off, carry off, fire off, send off, hand off</i>
5. Commencement	<i>Hit off, kick off, pop off, tip off, set off, go off (on smn.), goof off, slack off, mouth off, show off, count off, sound off, read off, start off</i>
6. Completion	<i>Finish off, knock off, pay off, polish off, pair off, pull off</i>
5a. Deactivation	<i>Turn off, flick off, switch off, leave off, keep off, call off, sign off, log off</i>
5b. Kill	<i>To off (smn.), knock off, pick off, finish off, bump off, kill off</i>
7. Opposition	<i>Face off, square off</i>
6a. Alternation	<i>Trade off, switch off, change off</i>

Diagram 2: Polysemy of *off*

4.1.2.a DISPLACEMENT & REMOVAL SENSES.



The central sense of *off* when used as a preposition is fairly straightforward. It is a complementary antonym of the central sense of *on*: *supported contact*. If *supported contact* can be seen as activating the image schemas of VERTICALITY, CONTACT, and SUPPORT, the central sense of *off* can be understood as an inversion of these three schemas. In (31), *the ball* had been vertically oriented to, in contact with, and supported by the table, but all three of these conditions have ceased:

(31) *The ball rolled off the table.*

(32) *The cat is off the table.*

The fact that *off* has an inverse schema profile to *on* is not unique to its central sense, and most of *off*'s senses in PVs contrast with one of *on*'s senses as well. That said, *off* seems to have a more varied use in PVs than *on* and contains not only significantly more verbs overall but more senses as well. By inverting *on*'s schemas, there is a strong degree of implied motion in the central sense of *off*. While *off* can be used to describe stationary objects, it is much more commonly used with objects in motion.¹⁰

The PVs that are directly derived from this central sense have a sense of *removal* or *subtraction*, examples of which follow:

(33) *I dried my hands off.*

(34) *I dusted off the cabinets.*

(35) *I took off my jacket.*

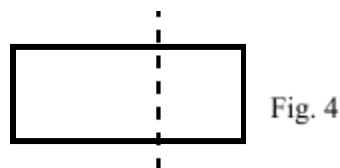
(36) *I checked/crossed off the first task and began the second.*

(37) *I tried to laugh their comments off.*

(38) *We had plans, but they totally blew me off!*

Off in this sense is a complementary antonym of *on* in PVs with the sense of *attachment*. Its image schemas are oppositional to *attachment*, inverting CONTACT and SUPPORT.¹¹ This sense has both literal and metaphoric and a few other clear patterns.¹² Most of the verbs that can be used with *on* to describe wearing or donning clothing can be used with *off* to describe a removal of clothing, as in (35). The use in (36) demonstrates a minor abstraction, in which *off* is used to describe the removal of items from a list, while the PVs in (37) and (38) exhibit typical metaphorical usage of this sense.

4.1.2.b DETACHMENT.



¹⁰When *off* describes the location of a stationary object, there is usually an implication that the object had just moved from on top of something, as in example (32).

¹¹*Removal* arguably activates the SOURCE schema and in contrast *addition* activates GOAL, though these are less relevant. The source and GOAL are either implied, as is the case with *I put on/took off my jacket*, or they are introduced with prepositional phrases.

¹²For example, many verbs associated with cleaning can be used with *off* to form PVs that fall under this sense (ex. 33 & 34). The reasoning behind this is readily apparent: cleaning involves the removal of whatever was causing the dirtiness.

This next sense is very closely related to the previous. We can distinguish the two from each other using figure-ground relations: the *detachment* sense describes the removal of a figure that is part of the ground rather than simply *on* the ground. This sense therefore activates the PART-WHOLE schema and draws from the inversion of the CONTACT schema. The *detachment* sense is usually found in transitive verbs (e.g. 39 & 40) but can be used intransitively, like in (41).

- (39) *The dog **bit** his finger **off**!*
 (40) *I **broke off** a piece of the chocolate bar.*
 (41) *The **growth** eventually rotted **off**.*

In cases where this sense divides an area rather than an object, it contributes a sense of *partitioning*:¹³

- (42) *The police **roped/cordoned** the crime scene **off**.*
 (43) *The city **blocked off** a couple streets in preparation for the parade.*

4.1.2.c MOTION AWAY.

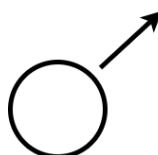


Fig. 5

This sense includes one of the largest sets of PVs in the *off* data. It is primarily intransitive and used with inherently directed motion verbs, like *run* in (44), though it can be used transitively in cases like (46).

- (44) *The criminals **ran off** after the robbery.*
 (45) ***Screw/Buzz off**!*
 (46) *Our dog was able to **fight/scare off** the coyotes.*

This sense is highly productive. Most motion verbs can be used with it and many other verbs that describe an action can as well.¹⁴ This sense activates the SOURCE and PATH image schemas, where the source is the speaker or original point of motion, and the path moves outward from there.¹⁵

4.1.2.d COMMENCEMENT.

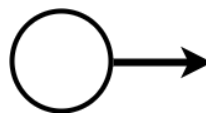


Fig. 6

This sense is very closely derived from the previous. The PVs under this sense describe processes beginning from a point in time.

- (47) *We should leave before things **pop off**.*
 (48) *We really **hit it off** last night.*
 (49) *Could you stop **goofing off**?*

¹³*Partition* is not its own sense. The same image schemas are activated; the sense of *detachment* is just translated from the parts and whole of a 3-dimensional object to the parts and whole of a 2-dimensional area.

¹⁴ It can even be found in constructions like in (45), which means something akin to *go away*!

¹⁵ I argue this sense activates the CENTER-PERIPHERY schema as well. The movement away from the source point is radial, and the more peripheral to that source point, the further *off* the trajectory is.

This sense does not have a contrast directly with any senses of *on*, but shares some similarities with the *continuance* sense. *Continuance* implies the path of action while *commencement* implies the source. This sense is motivated by the conceptual metaphor ACTION IS MOTION, and can be understood as a transformation of spatial movement to temporal movement from a point in time.

4.1.2.d COMPLETION.



Fig. 7

Backtracking, this sense is derived from the central sense of *off*, but it is much more metaphoric in use than most of the other senses of *off*. PVs that contain this sense describe the completion or cessation of an action or process.¹⁶

- (50) *Can we hurry up and **finish** this off?*
 (51) *The robbers successfully **pulled** the heist off.*

This sense's motivations become clear with the conceptual metaphors PURPOSES ARE DESTINATIONS (Kövecses, 2010).¹⁷ This metaphor can be found in the ways we discuss achieving a goal (e.g. *He finally reached his goals; Graduation is the endpoint of your college career*), and even using the word *goal* to mean "a desired result" is motivated by this metaphor, as it is drawing from our understanding of movement through space to an endpoint.

This metaphor and the larger Event Structure Metaphor that contains it help clarify the connections that the *commencement* and *completion* senses of *off* have to a sense of *on*. At first glance, they do not seem to have any contrastive senses, unlike the other senses of this particle. An understanding of PURPOSES ARE DESTINATIONS and the related PROGRESS IS MOTION FORWARD not only solves this issue but also help demonstrate the image schemas that motivate these senses. With PROGRESS IS MOTION FORWARD, a task underway can be understood as motion through space along a path. The *continuance* sense of *on* therefore activates the PATH schema, and the agent of PVs that draw from this sense are metaphorically still *on* the path of action. After the action is completed they are *off* it. The start, middle, and end of a process can therefore be represented as such:



Fig. 8

¹⁶ A significant number of PVs that all general mean *to kill* (e.g. *Finish off, pick off*) are contained by this sense. Here, the action being terminated is that of living.

¹⁷ This metaphor is closely related to ACTION IS MOTION, and both are contained within the Event Structure Metaphor.

The *commencement* and *completion* senses activate the SOURCE and GOAL schemas respectively, and they are *off* the path in that the process they describe is no longer *ongoing*.¹⁸ The aforementioned set of PVs that use *off* to describe the deactivation of electrical appliances are contained by this sense. As previously discussed, *activation* and *deactivation* PVs seem to have originally been used to describe the allowance for or prohibition of the flow of fluid or gas. While the *activation* verbs allow for a state of continued flow, the *deactivation* verbs end it.

4.1.2.d OPPOSITION.

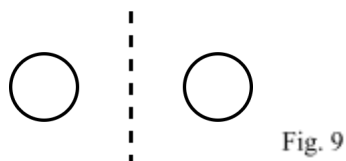


Fig. 9

The final sense of *off* in PVs means something equivalent to *oppositional from a central point*:

- (52) *The opponents **faced/squared off**.*
 (53) *We **traded/switched off** quizzing each other for the test.*

This sense activates the CENTER-PERIPHERY image schema. There is no obvious parallel between this sense and any sense of *on*, though this image schema may help explain this. The two figures located oppositionally to each other are peripheral to the point between them. This sense is derived from the *motion away* sense, which conceptualizes *movement off* as *movement away*.¹⁹

4.2. IN AND OUT.

Table 4

	CONTAINMENT	CENTER-PERIPHERY	SOURCE	PATH	GOAL	PART- WHOLE
<i>In</i>						
<i>Interior to</i>	+	+	/	/	/	/
<i>Motion inward</i>	+	+	/	/	+	/
<i>Motion to focal point</i>	/	+	/	/	+	/
<i>Contribution</i>	(+)	+	+	/	+	+
<i>Fill</i>	+	+	/	/	/	/
<i>Integration</i>	+	/	/	/	(+)	+

¹⁸This may explain why *to* prepositional phrases commonly follow *on* PVs and *of* prepositional phrases follow *off* PVs: *to* introduces goals, and *of* introduces sources.

¹⁹ The verb in (53) is related to this idea as well, though in a more abstract sense. The individuals trading off can be conceptualized as opposite each other and located peripherally to a point between them.

<i>Enclosure</i>	+	+	/	/	/	/
Out						
<i>Exterior to</i>	+	+	/	/	/	/
<i>Motion outward</i>	+	+	+	/	/	/
<i>Motion from focal point</i>	/	+	+	/	/	/
<i>Removal</i>	+	+	+	/	/	/
<i>Disaffiliation</i>	+	+	/	/	/	-
<i>Exclusion</i>	+	+	/	/	/	/
<i>Terminus</i>	/	+	/	/	+	/

4.2.1 POLYSEMY OF *IN*.

Table 5

Senses of <i>in</i>	Examples
1. Interior	<i>I am in the house, sit in, have in, stay in, dine in</i>
2. Motion inward	<i>ask in, barge in, bash in, breath in, break in (to a location), come in, dig in (lit. & fig.), drill in (lit. & fig.), do in, dive in, feed in, fold in, go in, let in, move in, plug in, rush in, settle in, step in, suck in, take in (lit. & fig.), walk in</i>
2a. Installation	<i>leave in, put in, stand in, swear in, usher in, vote in</i>
3. Motion to focal point	<i>bring in, close in, draw in, fly in, hand in, home in, kick in, lean in, pull in, reel in, rein in (fig. & lit.), roll in, send in, tuck in, turn in, zoom in</i>
3a. Focus	<i>clue in, key in, lock in, dial in, listen in, tune in, zoom in</i>
4. Contribution	<i>add in, cash in, chime in, chip in, pitch in, tie in, weigh in</i>
5. Fill	<i>color in, fill in, ink in, pencil in, shade in, type in, write in</i>
6. Integration/Assimilation	<i>blend in (lit. & fig.), fit in, mix in, set in, soak in, stir in, break in (e.g. shoes), wear in (e.g. shoes)</i>
6a. Membership	<i>cut in (cards), log in, sign in, deal in, fit in (fig), factor in, join in, opt in, slot in, count in, punch in, clock in, go in (on smth.</i>

	<i>with smn.), weigh in (boxing)</i>
7. Enclosure	<i>box in, close in, wall in, keep in, sandwich in, block in, fence in, hold in, lock in(lit), seal in, shut in, snow in</i>

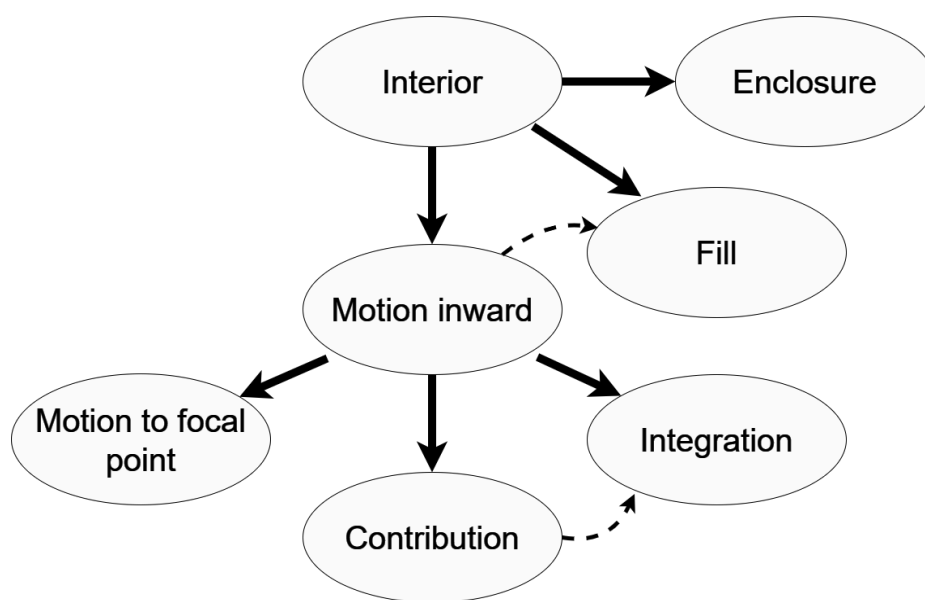
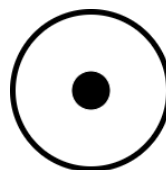
Diagram 3: Polysemy of *in*

Fig. 10

4.2.1.a INTERIOR.

The central sense of *in* as a preposition describes the relationship between a figure and an enclosed space or *interior*. In (54), *the dog* is the figure that is enclosed by *the crate*. The use in (55) demonstrates that the enclosed space can take a variety of forms and is not limited to buildings or typical physical areas. While less common, this sense can also be found in some PVs, like in (56) and (57).

- (54) *The dog is in the crate.*
- (55) *The nail is stuck in his hand.*
- (56) *We **dined in** at the restaurant.*
- (57) *She is **staying in** tonight.*

This sense activates the CENTER-PERIPHERY and CONTAINMENT image schemas. These two schemas are very closely related in the senses of *in* and *out*. The enclosed space is understood conceptually as a container holding the figure within it. The walls or boundaries of the enclosed area are effectively the maximal periphery of the space in question. In PVs, the

ground is often implied by context and does not need to be explicitly stated. This schema is incredibly important and central to *in* and *out* PVs and is found in the majority of *in*'s senses as a spatial particle. The CENTER-PERIPHERY schema on the other hand seem to be the primary motivator in any of these verbs that have explicit or implied motion.

4.2.1.b MOTION INWARD.

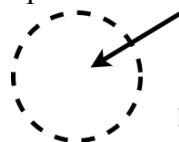


Fig. 11

This is by far the most common sense of *in* in PVs. This sense is very close to the central sense of *in*, the major difference being that the verbs here describe motion from the outside of an enclosed space *to* its interior, and it likewise activates the CONTAINMENT and CENTER-PERIPHERY schemas. This sense is most common with intransitive verbs like in (58) and, in which the agent of the verb enters into an enclosed space, but it can be found in transitive constructions as well (e.g. 60 & 61).

- (58) *You know you can knock instead of just **barging in**, right?*
- (59) *The ceiling **caved in**.*
- (60) *He collapsed after **breathing in** the gas.*
- (61) *She **invited me in** after the date.*

Motion inward additionally activates the GOAL schema, which is generally speaking *inside*. Like in the central sense, the enclosed space acts as a container and can be anything from a building to lungs.²⁰

A sub-sense of *motion inward* can be glossed as *installation* and can be found in the following examples:

- (62) *The advisor was **sworn in** on Monday.*
- (63) *Residents **voted the nominee in** by a wide margin.*
- (64) *Can you **stand/fill in** for me?*

This usage of *in* is typically figurative, and the PVs in this sub-sense seem to be motivated by the conceptual metaphors STATES ARE CONTAINERS²¹ and CHANGES ARE MOVEMENTS (Kövecses, 2010).²² These metaphors are reflected heavily by the language we use when talking about jobs. We even call them *occupations* and *positions*. Each of the PVs that hold this sense are used to describe an individual *filling* an open role, be it at a company or otherwise.

4.2.1.c MOTION TO A FOCAL POINT.



Fig. 12

²⁰There are many metaphorical uses of this sense as well, such as in constructions like *letting an insult sink in* and expressions like *drill a point in* and *dig your heels in*.

²¹ This metaphor helps explain the use of spatial terms when talking about psychological and ontological states. For instance, we talk about people being *in love* or *in distress* and objects as being *in transit* or *in motion*. STATES ARE CONTAINERS is ubiquitous in the more metaphorical and idiomatic senses of *in* and *out*.

²²These are part of the previously mentioned Event Structure Metaphor.

This sense is directly derived from the previous and activates the CENTER-PERIPHERY and GOAL schemas, though the CONTAINMENT schema is dropped. Here, the goal can be understood as the central point to which the movement is directed.

(65) *They're **closing in** (on us)!*

(66) *He **reeled** another fish **in**.*

The CENTER-PERIPHERY schema is key to understanding how this sense may have developed. As per the previous discussion on these two schemas, CENTER-PERIPHERY is implied by the CONTAINMENT schema. The figure in these examples is moving from a position farther out to a more central position. (65) displays a typical example of this.

Contained within this *motion to a focal point* sense is a sub-sense that denotes *focus* or *attention* and can be found in examples like these:

(67) *Can you **zoom in** any further?*

(68) *We **listened in** on their conversation.*

(69) *He really **locked in** during the final quarter and pulled out a win.*

These PVs are no doubt related to the directed motion verbs common in the *motion to a focal point* sense, and while there is no actual motion with verbs like *zoom in*, there is still the appearance of movement.²³ This logic is still present in examples (68) and (69). The focus in (68) is being drawn through sound rather than visual data. The use in (69) is metaphorical and describes a different type of focus altogether, though it is still motivated by this same logic.²⁴

4.2.1.d CONTRIBUTION.

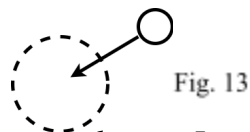


Fig. 13

This sense is directly derived from the *motion inward* sense. In terms of meaning, it is very similar to the transitive PVs that fall under that sense, though there are some interesting patterns that distinguish it from those. Most of these verbs are intransitive, though there are some exceptions like in (72).²⁵

(70) *He's always **chiming in** with his opinion.*

(71) *He tries to **weigh in** on every issue.*

(72) *Everyone **chipped in** \$5.*

Here, an action is being directed towards a central point. This sense activates the CENTER-PERIPHERY and GOAL schemas like the sense it is derived from. The PVs under this sense seems to be motivated by the PART-WHOLE schema as well, as in most cases the agent of the verb is one of many adding in a contribution.

4.2.1.e FILL.



Fig. 14

²³ When zooming in with a camera, the view fixes more and more toward the central point in the field of view. This even gives the illusion to the eye of approaching that central point.

²⁴*Lock in* also helps display the productivity possible in PVs. While the verb *lock in* to mean “to lock smn./smth. inside” is attested as early as 1488 per the OED, this specific sense is fairly new.

²⁵In addition, the contribution being made is often vocal, rather than a physical object. The contribution being made is often implied, but it can be introduced with a *with* prepositional phrase, as is the case in (70).

(73) Please **fill** the bubble all the way **in** on your ballot.

This is one of the more straightforward senses of *in* in PVs. It seems likely that it could have branched off from the *motion inward* sense, though it still has a strong connection to the central *interior* sense of the particle. While it could be argued that the verbs here could be contained by the *motion inward* sense, I suggest that they are distinct enough in meaning to warrant their own sense. *Fill* still activates the CONTAINMENT schema, though it transforms a typically 3-dimensional bounded region into a 2-dimensional plane. The container here is a 2-dimensional space to be filled in with marking.

4.2.1.f INTEGRATION.

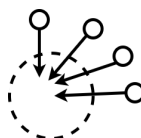


Fig. 15

The *integration* sense is derived from *motion inward* and can best be understood through figure-ground relationships, though the ground in this situation is not typical. In regular instances of this sense, rather than a static object or location, it is instead a collection of something, be that objects, particles (e.g. 74), people (e.g. 75), or otherwise.

(74) **Stir in** the flour before pouring.

(75) She tried to **blend in** in the crowd.

(76) I still need to **break** these shoes **in**.

The figure here integrates into that larger collection. Key to this sense is the idea that the figure becomes part of the larger group and loses its individuality or distinguishment. *Integration* activates the CONTAINMENT and PART-WHOLE schemas.²⁶ Some fringe cases include instances like (76), where the integration is less literal and could possibly be more accurately glossed as *conformity*. When a shoe is broken in, it has been made to better conform to the foot.

There is a significant set of PVs of *in* within *integration* that form a sub-sense and denote something closer to *inclusion* or *membership*: These verbs are used exclusively in describing a person activating or achieving membership in a larger group:

(77) She **clocked in** at 9:30.

(78) He never really **fit in**.

As with its overarching sense, the figure starts outside a group and becomes part of that group through the verb. The CONTAINER and PART-WHOLE schemas are of course active here as well, though unlike the primary sense of *integration*, CENTER-PERIPHERY is also active.²⁷

²⁶The CONTAINMENT schema's activation here is informed by the conceptual metaphor UNDELINEATED PHYSICAL OBJECTS ARE CONTAINERS, which exists in sentences like *throw it in the pile* (Kövecses, 2010).

²⁷ It seems that this difference is likely a result of schematic transformation as the subject from these verbs shifts from particles or other small objects to human beings and the activation of the conceptual metaphors INVOLVEMENT IS CLOSENESS and INTIMACY IS CLOSENESS (Kövecses, 2010). These metaphors are incredibly common in how we talk about interpersonal relationships and can be seen in the terms *ingroup*, *outgroup*, and even using the word *close* to describe a relationship.

4.2.1.g ENCLOSURE.



Fig. 16

This final sense is very closely related to the central sense of *in* and as such activates both the CONTAINER and CENTER-PERIPHERY schemas. It differs from *interior* in that the PVs under this sense construct the container around the figure:

(79) *The prisoner was **walled in** brick by brick.*

(80) *You totally **boxed** my car **in**!*

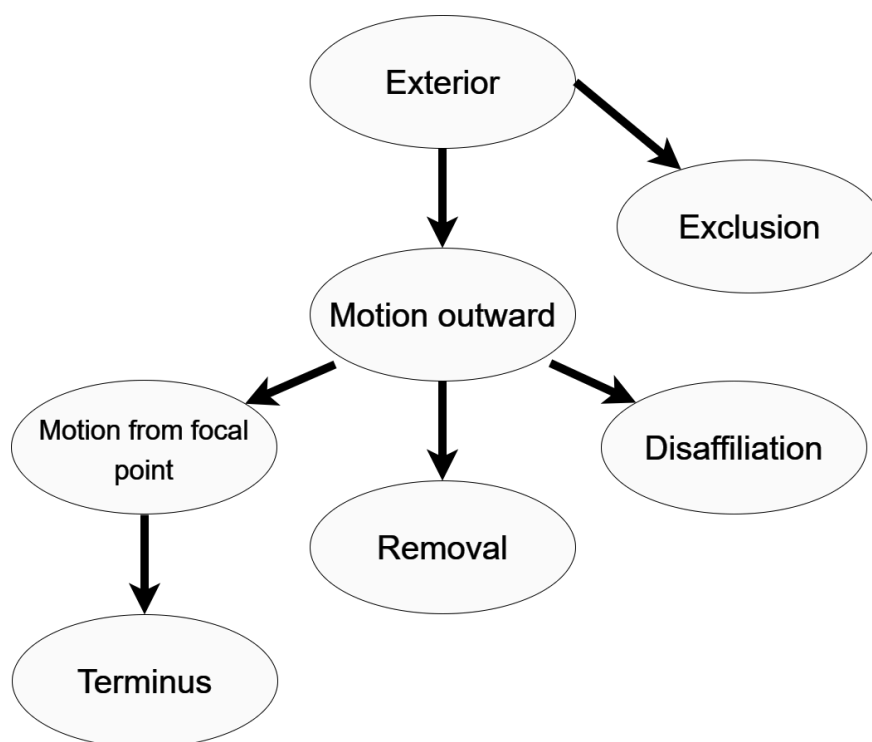
While CENTER-PERIPHERY is somewhat less salient than in the central sense, it is still active in that the outer bound of the container being constructed *is* the periphery and the figure is located in a vaguely central position.

4.2.2 POLYSEMY OF *OUT*.

Table 6

Senses of <i>out</i>	Examples
1. Exterior	<i>The dog is out of the kennel, ask out, camp out, dine out, eat out, hide out, hire out, invite out, leave out, sit out, stay out</i>
2. Motion outward	<i>back out, break out, breath out, bring out, flush out, force out, get out, go out, let out, move out, ooze out, push out, run out, see (smn.) out, spew out, squeeze out, step out, throw out</i>
3. Motion originating from focal point	<i>Blast out, broaden out, bulge out, dole out, drag out (lit & fig), draw (an action) out, drive out, fan out, fly out, give out, grow out, head out, iron out, lash out, puff out, read out, send out, set out, stare out, spread out, start out, watch out, zoom out</i>
3a. Production	<i>Act out, bark out, bawl out, belt out, blurt out, boom out, blare out, call out, churn out, clap out, crank out, draw out, grind out, hammer out, map out, rush out (fig), shout out, sing out, sketch out, speak out, type out, write out, yell out</i>
3b. Cessation	<i>cop out, chicken out, cut (an action) out, flake out, time out</i>
4. Removal	<i>bail out (lit & fig), balance out, buff out, blank out, bow out, buy out, call (smn.) out, scratch out, sell out (lit & fig), snap out, suck out, sweat out, take out, tear out, thin out, vote out</i>
4a. Depletion	<i>pour out, clean out, clear (smth.) out, empty out, hollow out</i>
4b. Extraction of Information	<i>feel out, figure out, find out, puzzle out, reason out, sniff out, suss out</i>

5. Disaffiliation	<i>Beat out, clock out, cost out, crowd out, drown out, factor out, hold out, leave (smn.) out, log out, miss out, opt out</i>
6. Exclusion	<i>Block out, blot out, box out, keep out, shut out, snow out</i>
7. Terminus	<i>bang out, battle out, brave out, burn out, chill out, curse out, die out, dry out, fizzle out, max out, pan out, pig out, play out, psych out, round out, shape out, talk out, tap out, tire out, tough out, wait out, wear out, wipe out, work out</i>
7a. Loss of Consciousness	<i>Black out, choke out, knock out, pass out, space out, zone out</i>

Diagram 4: Polysemy of *out*

4.2.2.a EXTERIOR.

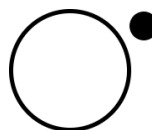


Fig. 17

The central of *out* as a preposition is a direct antonym to the central sense of *in* and means *exterior*. It activates the same schemas as *interior*: CONTAINMENT and CENTER-PERIPHERY. Whereas *off*'s senses can generally be described as a cessation of their antonymic *on* senses, the senses of *in* and *out* often describe the same phenomenon, just directionally opposite each other. This *exterior* sense describes the location in space of a figure in relation to an enclosed space, or container. The examples below illustrate this:

- (81) *The dog is out of the crate.*
 (82) *We camped out in the yard.*

(83) *They **ate out** last night*

(84) *The company decided to **hire out** to fill the position.*

In (81), the *crate* is the container and ground, while the dog is the figure. Inside the crate can be understood as the center point, and the dog is located somewhere past the container's maximal periphery. There are actually quite a few PVs that fall directly under this central sense, like in (82), (83), and (84). This is likely due to the fact that *out* is by far the most common particle in PVs in this study, with about double the number of *off* and *in* PVs and almost four times as many *on* PVs.

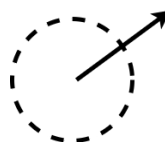


Fig. 18

4.2.2.b MOTION OUTWARD.

This sense is closely related to the central sense, the major difference being the addition of movement from the interior of the container to the exterior. Because of this, it activates the SOURCE image schema in addition to CONTAINMENT and CENTER-PERIPHERY. The source of movement can be broadly described as the interior. It is often implied by context, like in (85), but it can be specified with an *of* prepositional phrase like in (86).

(85) *They **backed out** slowly.*

(86) *Air **leaked out** of the balloon.*

This sense is fairly common across both transitive and intransitive verbs and can be used to produce PVs from just about any verb that expresses directional movement. This sense obviously pairs with the *motion inward* sense of *in*, and its activation of SOURCE contrasts with *motion inward*'s activation of GOAL.

4.2.2.c MOTION ORIGINATING FROM A FOCAL POINT.



Fig. 19

This sense is very closely related to the previous sense and activates the CENTER-PERIPHERY and SOURCE schemas while dropping the CONTAINMENT schema. As with *motion outward*, this can be found in a wide variety of PVs when used in conjunction with a verb that describes directional movement.²⁸

(87) *They **drove out** into the night.*

(88) *She **spread** the papers **out** across the table.*

(89) *You should **watch out** for cars.*

The motion that *out* describes in this sense is often radial, as in PVs like *spread out* and *fan out*. This sense can be extended outside of just motion verbs, such as in (89) to more generally describe an action originating from a fixed point.²⁹

²⁸ In fact, many of the verbs that can be found with *motion outward* can draw from this sense as well in the right context. *Drive out* in (87) is an example of this, and in a sentence like *they drove out of the garage*, the particle *out* would be contributing the sense of *motion outward*.

²⁹ There are a few PVs within this sense that are antonyms of those in the *focus* sub-sense of *on*, like *zoom out*, though they are rarer.

Motion originating from a focal point contains a significant set of verbs that have something to do with the *production* of something:

- (90) *Stopping **barking out** orders at me!*
 (91) *Can you **sketch out** a map for me?*
 (92) *We can **churn out** hundreds of these a day.*

It is important to note that it is the verbs themselves that contribute the sense of production. In these senses *off* expresses the source of whatever is being produced and its directional orientation outward from that point.³⁰

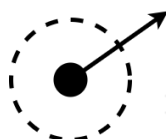


Fig. 20

4.2.2.d REMOVAL.

This sense is relatively straightforward and connects directly to the previous two. What distinguishes it is that the PVs that borrow from this sense describe an agent removing an object from something else. It activates the CONTAINMENT, CENTER-PERIPHERY, and SOURCE schemas like the *motion outward* sense. In most cases, the figure is located within the ground object, and brought outside by the verb:

- (93) *Can you **edit that out**?*
 (94) *He was **voted out** of office.*
 (95) *They **bailed out** the banks again!*

Verbs like *pull out* and *tear out* represent more literal examples of this, while the examples above are mostly figurative. The use in (94) contrasts with PVs under the *installation* sub-sense of *in* and likewise is motivated by the conceptual metaphor STATES ARE CONTAINERS.³¹

There are a few interesting patterns within this sense. First are PVs like *even out*, *balance out*, *cancel out*, etc. that describe a situation in which two oppositional objects “remove” each other from contention by being equivalent in strength or importance. There are also several PVs in which this sense seems to add a quality of complete *depletion*, like *hollow out*, *pour out*, and *clear out*. Finally, this sense of *removal* can often be used to denote the *extraction of information*, such as in *figure out*, *find out*, *suss out*, *sniff out* and *tease out*.³²

4.2.2.e DISAFFILIATION.



Fig. 21

³⁰ More abstract than this are PVs whose particle contributes meaning akin to *cessation* or *avoidance* (e.g. *I can't believe they **chickened out**.)* While the derivation of this sub-sense from the overarching sense may be unclear at first glance, the CENTER-PERIPHERY schema and the metaphor INVOLVEMENT IS CLOSENESS provides the answer. The agent of the verb is attempting to avoid something and whatever it is they are doing to get out of it is conceptualized as physical movement *out* and away from the point in space. To avoid involvement, they stay at the metaphorical periphery.

³¹(95) is also motivated by this metaphor, but here the state the banks are *in* is one of financial crisis. This is a figurative use of the verb *bail out*, but even its literal usage to mean “to remove water from a sinking ship” is motivated by this metaphor. The ship in question is being removed from a state of sinking.

³²The primary motivation here is the metaphor IDEAS ARE OBJECTS. In cases where the information is being pried out of a person, the metaphor THE MIND IS A CONTAINER would also be active.

This sense contrasts with the *integration/membership* sense of *in*. It activates the CONTAINMENT and CENTER-PERIPHERY schemas for the same reason as this sense of *in* and is furthermore motivated by the same INVOLVEMENT IS CLOSENESS metaphor. Because the verbs in this set describe the cessation of membership in a group, the PART-WHOLE schema is inverted rather than just not being relevant.

(96) *I **clock out** at 5pm.*

(97) *You **stick out** like a sore thumb.*

In (96), the speaker voluntarily ends their membership. The PV in (97) provides a nice contrast to the *blend in* example in (82). Here, the agent is unable to attain membership or integration into the crowd because of one thing or another. As with that example, the individual in question represents the figure while the crowd as a whole represents the ground.

4.2.2.f EXCLUSION.

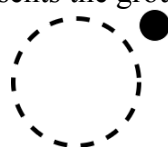


Fig. 22

This sense contrasts with the *enclosure* sense of *in* and is similarly close to the central sense of its spatial term. Like the *exterior* sense, it activates the CONTAINMENT and CENTER-PERIPHERY schemas and demonstrates an identical figure-ground relationship, as in the following examples:

(98) *You're **boxing me out** of my parking space.*

(99) *They got **shut out** of the venue.*

Like with the *enclosure* sense of *in*, the primary factor that distinguishes it from the central sense of *out* is that the PVs here construct the container, resulting in the figure's exclusion from it. As a result, the figure is outside the peripheral boundary of that container.

4.2.2.g TERMINUS.

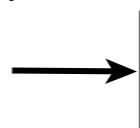


Fig. 23

The final sense of *out* as a particle in PVs contributes a sense of totality or finality. The verbs that are augmented by this sense are carried out to their ultimate degree:

(100) *She **lived out** the rest of her days in peace.*

(101) *Let's **see** how this plays **out**.*

Its motivations lie in the CENTER-PERIPHERY and GOAL schemas. These schemas in conjunction with the metaphor ACTION IS MOTION help clarify how this sense connects back to the other senses of *out* and how it draws on spatial cognition. If these actions are conceived as motion forward, then the more distance the agent of the verb travels, the farther *out* and away they get from their starting point, which can be understood at the center in the CENTER-PERIPHERY schema. As they progress onward, they eventually hit the outermost bound or the maximal degree of that action. The PVs in (100) and (101) both exhibit instances in which time is the primary motivating factor.

The following examples present this sense in terms of intensity rather than time:

(117) *He really creeps me out.*

(118) *Chill out, man!*

The act of *creeping someone out* denotes a situation in which the individual in question has caused the maximum level of discomfort, which *chilling out* is relaxing to the utmost degree.³³

5. DISCUSSION.

In this study I have demonstrated that there are clear categories of meaning contributed to phrasal verbs by their spatial particles. These findings challenge the common assumptions about PVs held in mainstream linguistic research and prove not only that the meanings behind PVs *are* in fact compositional, but also that their conceptual motivations are retrievable through the frameworks discussed here, even in the most idiomatic cases. PVs commonly labeled “compositional” are simply more transparent than those that belong to these second and third categories. That is not to say that this second group is *not* idiomatic; they certainly are, though this by no means signifies a lack of compositionality or systematicity.

Furthermore, my findings highlight the utility of image schemas and other cognitive frameworks like conceptual metaphor in the semantic analysis of abstract and figurative language on a broader level and exemplify the necessity in expanding our understanding of these conceptual frameworks. Image schemas clearly play a significant role in spatial cognition, and past that, any language use that relies on spatial terms or our knowledge of spatial concepts.

The implications of this are not limited to PVs; as most PVs are commonly understood to be lexical idioms and dead metaphors, this study likewise pushes back against common understandings of idioms as a whole. Frazer (1970) presents the traditional view that idioms themselves are traditionally considered “dead” in mainstream linguistics. While their origin may be in metaphor, they no longer hold a synchronic connection to the metaphors they are derived from, and their meanings are therefore not compositional. He does however note that the degree to which an idiom is actually frozen can vary significantly from case to case and outlines a “Frozenness Hierarchy” with seven levels divided by the number of operations and transformations the idiom in question can undergo. Even idioms that sit at the top of that hierarchy do exhibit a degree of compositionality. Gibbs & Hamblin (1999) observes that an idiom like *kick the bucket* cannot be used in a case in which the subject has died slowly because the verb *kick* implies quickness. Similarly, one’s dreams cannot *go up in flames* over the course of years. Furthermore, parts of some idioms can be modified with adjectives and adverbs, and others can be quantified while the idiom itself retains its figurative meaning. This all would seemingly push back against the common views on them and suggest that a greater degree of

³³There is a group of verbs that seem to be equally influenced by this sense and the *removal* sense: those that express a loss of consciousness, such as *black out*, *choke out*, *knock out*, and *pass out*. The conceptual metaphor STATES ARE CONTAINERS no doubt informs these verbs as well. The state here is that of being conscious, and an individual undergoing one of these verbs is removed from that state. The connection back to the *terminus* sense is easiest seen in verbs like *choke out*. Someone who has been choked out has been choked to the maximum degree without being killed and has subsequently lost consciousness.

nuance should be considered. These observations also push back against the common assumption that idioms are stored as a singular item in the lexicon (Gibbs, 1984).

Frazer (1970) does still hold to another common assumption on idioms: that their literal meaning is processed before the figurative, and the figurative meaning is only processed if the literal produces an illogical interpretation of the utterance. This would imply that it should take longer to process and interpret the figurative meaning. Gibbs (1984) points out that this is not the case. In timed studies in which participants were given sentences containing idioms used in both literal and figurative sentences, the opposite was in fact true. Figurative uses of the idioms were processed much faster than their literal interpretations, suggesting that the figurative sense is directly accessed and accessed first. This squares with our knowledge and interpretation of PVs as well. If I told you to *buzz off*, there would be no delay in understanding that I wanted you to leave immediately despite that definition being unattainable from any literal interpretation.

All that said, there is still a problem in determining the internal logic behind idioms. Gibbs (1992; 1995) argues that the solution to this lies in conceptual metaphor. Idioms like *blow your stack* and *flip your lid* may seem opaque at first glance, though both can easily be explained with some knowledge of the common and well-attested conceptual metaphors THE MIND IS A CONTAINER and ANGER IS A HOT FLUID IN A CONTAINER. Gibbs (1992) verifies this assumption with a series of experiments that display a link between the source domains of these conceptual metaphors and idioms they motivate. The significance here is not *just* that these idioms are conceptually motivated but that those motivations are accessible by listeners. It would stand to reason that the same would therefore be true of PVs.

The consideration of both idiomatic PVs and idioms collectively as dead metaphors is reductive and ultimately precludes further exploration of their meanings and motivations. Idioms play a significant role in everyday language use, and phrasal verbs are incredibly common in the English language. Finally, it seems foolish to me to disregard the evidence that spatial reasoning is reflected by our language use. There is ample support for the idea that spatial reasoning impacts general mental cognition as a whole, and if we want to probe deeper into how human cognition actually functions, then spatial terms are an important element to deliberate.

This analysis additionally proves useful outside the realm of pure linguistics. Due to the challenge they present to L2 speakers of English, much of the prior research on the semantics of PVs has been for pedagogical purposes. For instance, Kiativutikul & Phoocharoensil (2014) use COCA and the British National Corpus (BNC) to explore the collocations and environments shared by the verbs *carry out*, *find out*, and *point out* to locate patterns that can be included in reference texts for L2 English learners. Many other corpus-based studies have been carried out with similar motivations. Gardner & Davies (2007) locates the most frequent PVs in British English and the most frequent base verbs in PVs. They found that only 25 PVs accounted for about one-third of all PVs in the BNC, and 100 accounted for half. Due to the highly polysemous nature of many PVs, they estimated over 550 senses for this set of 100 verbs, and this study's discussion centers around the difficulties that may arise from this in ESL classrooms. Even more studies have focused on the efficacy of common methods of teaching PVs in ESL classrooms

and (Liu & Myers, 2020; Strong & Boers, 2019). Others have argued that the ability to simply identify PVs is more valuable to students than trying to memorize the most common ones. Darwin & Gray (1999) found that of the 20 most common PVs in college freshman-level academic texts, only three could be found in a typical ESL grammar book. One common method for teaching PVs is simple memorization, and if the resource texts themselves are insufficient, then this exercise would be near pointless.

Others have advocated for the application of cognitive frameworks in the instruction of PVs. Yasuda (2010) found that using conceptual metaphors in the instruction of PVs in ESL classrooms was beneficial to L2 English learners. This study took two groups of Japanese English learners in which the control group was taught a set of PVs using traditional instruction and the experimental group was taught the same set using conceptual metaphors relevant to the particles in the PVs. The students were then tasked with filling in the missing particles in 30 sentences using PVs, the first fifteen being familiar PVs from this study and the second being PVs they had not been exposed to. The group instructed with conceptual metaphors performed significantly better than the control with the unfamiliar PVs. Similar results have been replicated using conceptual metaphor and other cognitive frameworks in studies like Condon (2008) and White (2012). Their results have shown promise, though most of the research here is strictly on conceptual metaphor. While I no doubt believe that there is utility in this theory, I think that it would best serve the purposes of English learners if combined with instruction informed by our understanding of image schemas.

6. CONCLUSION.

While I have demonstrated the ways in which PVs are compositional and how meaning is motivated within them, there are still many unanswered questions left over from this study and many ways to expand this analysis in the future. For one, while the various senses of the particle are no doubt derived from their central senses as prepositions, this central sense is typically missing in PVs. More generally, their other senses as prepositions are either unused in PVs or very limited to specific verb classes. For instance, *take off* and *put on* can only be used as PVs with clothing. To draw again from figure-ground relations, the non-phrasal verbs *take* and *put* require an obligatory prepositional phrase that explicitly identifies the ground (e.g. *I put the apple on the table*), without which the construction is ungrammatical. My intuition is that this may be a product of inference. In the PV *put on*, the body is the ground element, but it does not need to be explicitly stated. This may be due to the relatively high frequency of these PVs in English and because of the greater context in which these verbs are used. A deeper exploration into the reason these prepositional senses are uncommon in PVs is likely necessary to further elucidate this, though.

I hope to continue this research in the future. The implications of this study call for further exploration of this topic and the connections between spatial cognition and language. There are a number of ways I would like to corroborate my findings with experimental data. If these senses are truly as motivated by these frameworks as I believe them to be, my

categorization should help in the identification of PVs and their underlying meanings. There are several directions to take it from there, be it in ESL instruction or determining how to apply these frameworks, to language models and NLP, both to aid in the challenges LLMs have with phrasal verbs and to potentially explore other ways of categorizing and classifying both PVs as a whole and the spatial particles that help build the meaning behind them.

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