Mapping *OUT-* Argument Structure*

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Abstract

This paper explores a phenomenon of English in which *out-* combines with a predicate to form a complex predicate (e.g., *outsing, outdo, outrun, outsmart*, ...), here called "out-PRED". A thorough investigation uncovers several new generalizations, leading to analyses (i) that out-PRED formation is productive and syntactic, building upon the structure for PRED, and (ii) that *out-* is the core of the out-PRED clause's extended verbal projection. These findings are derived via a derivation in which *out-* merges with PRED before any argument(s) can merge. This is then further supported by exploring domains in which out-PRED is unavailable; though these seemingly unrelated, they share deep derivational properties that are incompatible with the derivation of out-PRED. These findings have implications for the syntactic representation of argument structure more generally, supporting analyses where all arguments of a verb are syntactically severed from it.

1 Introduction

English allows for a grammatical construction in which *out-* occurs as prefix[1] to a predicate, forming a complex predicate that will be called "out-PRED" in this paper. Some examples of out-PRED, as attested on the internet, in books, and in periodicals are given in (1):[2]

(1) a. Armageddon **outgrossed** Deep Impact. (http://bit.ly/2wUo66w)

b. Google has **outdone** itself today (http://bit.ly/1GY0Np0)

c. Neither one **outsang** the other. (http://bit.ly/19PZpup)

d. 15-year-old Anna Meyer **outearned** her dad by playing shortstop in the All-American Girls Professional Baseball League. (http://bit.ly/2Tlmtv0)

e. Credit where credit is due - no one can **out-Mariah** Mariah. (http://bit.ly/2x4NLK1)

f. Feral hogs can **outcompete** and **outreproduce** deer. (http://bit.ly/2NYjpPI)

g. This new big pig **outweighs** the famous Hogzilla by $>$25 kilograms. (http://bit.ly/2EQv0gk)

h. [...] business interests **outresearched**, **outspent**, and **outlobbied** poorly funded and loosely organized groups (http://bit.ly/1CcGIKq)

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[1] I use this term pre-theoretically, to refer to a morpheme that occurs before a (morphologically free) stem. We will not address the question of precisely how this morpheme ought to be analyzed (e.g., as a particle, preposition, or something else).

[2] Throughout this paper, naturally occurring data found on the internet is given with a link to the source. All data, including naturally occurring data, have been verified with informal judgments of a small number of native speakers of American English.

Outside of a few papers, this phenomenon has not been deeply explored.[3] As such, this paper begins as an exploration of the basic grammatical properties of these out-PRED predicates. From this it will be argued that out-PREDs are actively derived in the morphosyntax (not listed in a pre-syntactic lexicon).

After establishing this, the paper turns its focus to the syntactic argument structure of out-PRED, which is categorically distinct from that of the PRED. After establishing generalizations, the paper focuses on identifying an appropriate analysis of the derivation of out-PRED. A rough sketch of the syntactic structure of out-PRED that will be uncovered is given (2):[4]

(2) $[_{\text{ExtArgP}}$ SUBJECT $[_{\text{IntArgP}}$ OBJECT $[_{\text{outP}}$ *out-* $[_{\text{VP}}$ PRED]]]]

Throughout this paper, "PRED" is a shorthand for "lexical predicate", which is a way of referring to the stem to which *out-* attaches. It is clear that out-PRED distributes as a verbal element (e.g., inflecting for tense), even when this same surface form of lexical predicate may appear elsewhere in the language as verbal (*out-do*), adjectival (*out-smart*), or nominal (*out-Mariah*).

Note that in the analysis in (2), neither the surface subject nor the object of an out-PRED are syntactically introduced in the PRED's VP – both are syntactically introduced in the extended projection of *out-*. (This contrasts with previous descriptions of the syntax of out-PRED, as in the works cited in footnote 3, which treat the subject as the external argument of PRED; these previous analyses cannot account for out-PRED patterns, as will be discussed in §3.) Following this, we will conclude that any PRED that can occur in out-PRED is syntactically severed from its arguments – both external[5] and internal. This holds even for predicates that are otherwise robustly transitive, such as *gross* (cf. (1a)) or *spend* (cf. (1h)).

The remainder of this paper has the following structure. After a thorough investigation of the generalizations that serve as the foundation for this analysis in §2–3, the details of the syntactic analysis of out-PRED's derivation are laid out in §4. Subsequently, §5 turns to the grammatical conditions under which out-PRED formation can be blocked, which provide additional support for the analysis in §4. The paper concludes in §6 with discussion of some broader impacts, descriptions of some areas for further research, and a summary of the findings.

2 out-PRED vs. PRED

Let us begin our investigation with some examples of out-PREDs that are especially salient and high in frequency, given in (3).

(3) a. **out-do oneself**: exceed the (high) standards one had previously established

b. **out-smart** / **out-wit** / **out-fox**: to defeat, by using clever thinking

c. **out-gun**: to exceed in firepower

[3] Irube 1984, Tolskaya 2014, and Kotowski 2020 are works centered around *out-* prefixation. In addition, it figures in as a component of a broader investigation in works such as Bresnan 1980, McIntyre 2003, Marantz 2009, and Baker 2019.

[4] The labels "ExtArgP"/"IntArgP" are intended as shorthands for (collections of) argument-structure-related projections. The structure of verbal predicates must encode a number of properties (e.g., eventuality, case licensing, and different argument-predicate relations, etc.); this work takes no stance on how "ExtArgP"/"IntArgP" relate to the syntax of these properties.

[5] For argumentation that external arguments are not introduced in the same syntactic projection as the lexical predicate, see Larson 1988, Marantz 1984, 1997, Hale & Keyser 1993, Chomsky 1995, Kratzer 1996, von Stechow 1996, Pylkkänen 2008, Borer 2005b, Lohndal 2012, Harley 2013, among many others.

d. **out-number**: to exist in a greater number

Given the opacity in meaning for some of these, one might be tempted to say that out-PREDs are not the result of morphosyntactic processes; and instead that they might be listed idiomatically in the lexicon. This investigation will show that there are key grammatical properties that identify this out-PRED in such a way to suggest that all instances, including cases like (3), share a core derivational structure. The remainder of this section will identify some core morphological and interpretive generalizations that relate out-PRED to its PRED core, which will provide a basis of our structural analysis of out-PRED.

2.1 Productivity of out-PRED

Despite the apparent idiomaticity of out-PREDs like (3), when we take a broader view, the evidence indicates that out-PREDs are formed by a productive grammatical process, which produces morphologically complex objects. An initial argument against the idea that out-PREDs are idiosyncratic lexical items is the fact that out-PRED can be readily created with new(er) lexical items as the PRED core.

(4) a. I'm known as "the researcher", that guy that can **out-Google** anyone (http://bit.ly/2JZhZl1)

b. Kate Moore [...] **out-texted** more than 250,000 participants (http://cnn.it/1xhXHfs)

Given the novelty of these words as verbal predicates, it must be that there is some process for creating out-PREDs from a PRED. Similar observations can be made with out-PRED forms that build on proper names. The Oxford English Dictionary defines this usage as meaning "to outdo a person, nation, or sect in respect of the attribute for which they are renowned" (*out- prefix*, entry 4c(ii)).[6]

(5) a. We would all love to **out-Einstein** Einstein by coming up with a better theory of gravity. (http://bit.ly/2nctg8B)

b. Has Kanye West just **out Kanye'd** himself? (http://bit.ly/2LsyjAk)

c. Goin' to Lady Gaga tonight? EVERYONE is dressing up! We have everything here to help you **out-Gaga** your fellow concert-goers!! (http://fb.me/BwjmIpD6)

d. Merkel has **out-merkeled** them again (http://bit.ly/2AeFTcL)

The out-PRED usages are necessarily at least as recent as the referent of the name, therefore requiring a process for creating new out-PREDs.

More crucial as an argument that out-PRED is a complex morphological object is that the PRED with which *out-* combines can itself be complex, having been formed by morphosyntactic processes:

(6) a. [*Cleaning products are being compared in effectiveness.*]
This one **out-disinfects** the others.

b. [*Budweiser/Miller/Coors all make bad beer, but they can spend lots of money to successfully brainwash people into liking it. Smaller companies can't do this as well as B/M/C.*]
[...] they don't have the resources to **outbrainwash** B/M/C. (http://bit.ly/2oRMnWA)

c. [*Jeff has 30 years of experience with sailing and sail racing, making him an expert.*]

[6]The *out-NAME* forms are related to the usage of proper nouns as predicates; cf. *Kanye is gonna Kanye*, meaning Kanye will act like Kanye is known to act. It has been suggested that the object of out-NAME is NAME (e.g., on LanguageLog, `http://itre.cis.upenn.edu/~myl/languagelog/archives/003430.html`). However, *out-NAME* is not restricted to contexts where its object is *NAME*: (5b–d) shows it can occur with a variety of objects.

Jeff can **out-strategize** any newcomer (http://bit.ly/2wVIuDB)

d. [*Two politicians, Mr. Harper and Mr. Martin are trying to show people they are nice guys, doing things all the political niceties of shaking hands, kissing babies, and metaphorically fingerpainting at kindergartens.*]
[Mr. Harper]'s been trying to **out-fingerpaint** Mr. Martin (https://tgam.ca/2Mdejxk)

e. [*Two groups are trying to remove screws as quickly as possible.*]
They are **out-unscrewing** them.

f. [*You and I were given the an email to re-word. Your revision of the email is better than mine.*]
You **out-reworded** me.

The PREDs in these cases are commonly understood to be morphologically complex, meaning that out-PRED must be complex as well, and therefore a derived form.

Lastly, and most strongly in favor of this idea is that out-PRED can be formed on another out-PRED form. This is demonstrated below with *out-out-run*:

(7) [*I_1 always run faster than everyone in my$_1$ class, and Kim$_2$ always runs faster than everyone in their$_2$ class too. However, Kim$_2$ always outruns everyone in their$_2$ class to a much greater extent than I_1 outrun everyone in my$_1$ class.*]
Kim **out-outruns** me.

Not only does this clearly demonstrate the morphosyntactic productivity of out-PRED, but it also demonstrates that out-PRED formation is a recursive process: the sort of grammatical object that out-PRED is is the same sort of grammatical object that PRED is.

In summary, it must not be the case that each out-PRED is either morphologically simplex or listed in a static lexicon.[7] This is summarized in the generalization below.

(8) **Generalization 1: Productivity of out-PRED**
out-PRED formation is a productive process of English, resulting in a morphosyntactically complex object.

Building on this, it follows that PRED, the stem to which *out-* attaches, is also an identifiable object in the derivation, for purposes of various grammatical operations and constraints. That is, since out-PRED formation combines *out-* and PRED morphologically, the PRED component should be "active" in the derivation of out-PRED. In the coming sections, we will see support for this from two domains.

2.2 Allomorphy and out-PRED

An analysis in which PRED is derivationally active is supported by facts of allomorphy. Specifically, an out-PRED form inherits all the morphophonological irregularities of the base to which it attaches. Consider the cases of *think*, *drive*, and *do* below.[8]

[7] Based on what we have seen so far, it is indeed possible that an out-PRED is formed in an active lexicon, if such a linguistic module exists – though see Marantz 1997, Borer 2005a,b, or Ramchand 2008, among many others, for detailed arguments against such a module. For an analysis with an active lexicon to be plausible, the lexicon would need to allow for processes that manipulate the properties of argument structure that we will see in §3 that out-PRED is connected to (valency, types of thematic relations, passivizability, etc.).

[8] The judgments below are intended to reflect acceptability in varieties of English that regularly distinguish past and past participle forms. (This contrasts with dialects where the same form (e.g., /dʌn/) is used in both past and past-participle contexts.)

(9) Past forms for *(out)-think*

a. think + -PAST = thought (*thinked)
b. out-think + -PAST = out-thought (*out-thinked)

(10) Past and past participle forms for *(out)-drive*[9]

a. drive + -PAST = drove (*drived)
b. out-drive + -PAST = out-drove (*out-drived)
c. drive + -PASTPART = /dɹɪvn̩/ (*/dɹɑɪvn̩/)
d. out-drive + -PASTPART = out-/dɹɪvn̩/ (*out-/dɹɑɪvn̩/)

(11) Past, past participle, and 3.SG present forms for *(out)-do*

a. do + -PAST = /dɪd/ (*/dud/)
b. out-do + -PAST = out-/dɪd/ (*out-/dud/)
c. do + -PASTPART = /dʌn/ (*/dun/)
d. out-do + -PASTPART = out-/dʌn/ (*out-/dun/)
e. do + -3.SG.PRES = /dʌz/ (*/duz/)
f. out-do + -3.SG.PRES = out-/dʌz/ (*out-/duz/)

The crucial observation to be made here is that irregular forms for PRED are maintained in the context of out-PRED; this is summarized in (12).

(12) **Generalization 2: out-PRED and PRED share allomorphs**
The contextually determined allomorphs for PRED (in its broader distribution as a verbal predicate) will serve as allomorphs for out-PRED in the same contexts.

This follows from the premise that irregular morphological forms are tied to particular lexical items. If out-PRED always uses the same allomorph as PRED would in the same context, it must be that the PRED object can be identified as separate from the *out-*, by whatever component of morphology selects the appropriate allomorph.

If, instead, out-PRED and PRED were listed separately in the lexicon, this complete mirroring of irregular forms would be unpredicted. In principle, if out-PRED and PRED were listed independently of one another, the (ir)regular forms tied to the PRED lexical item could also be independent of any (ir)regular forms tied to the out-PRED lexical item. This would allow for the possibility that an out-PRED could follow a trajectory of regularization, similar to what can be observed in cases of compounding:[10]

(13) Past forms for *(green-)light* and *(pile-)drive*

a. light + -PAST = lit green-light + -PAST = green-lighted
b. drive + -PAST = drove pile-drive + -PAST = pile-drived

Though *drive* has an irregular past form (*drove*), the regular past form can be used when they occur as part of compounds like *pile-drive* (*pile-drived*).[11] However, occurrence in out-PRED does not lead to regularization (**out-drived*). This can be explained if the derivation of out-PRED allows the morphological system to identify PRED as (being or containing) a constituent subject to allomor-

[9] In the sense of steering a vehicle.

[10] The claim is not that regularization must happen if PRED and out-PRED were listed separately, but rather that it can. For example, some speakers prefer *green-lit*, while others prefer *green-lighted*. What is different about out-PRED is that all out-PREDs investigated have this quality of sharing irregular forms with PRED, for all speakers consulted. This strongly suggests the sort of analysis laid out here, but does not on its own entail it.

[11] Three possible explanations for examples like *pile-drived*: (i) *pile-drive* is listed as its own lexical item, (ii) *pile-drive* is morphologically derived but *drive* is not treated as a verb in the derivation, (iii) *drive* is treated as a verb in the derivation of *pile-drive*, but not with the right kind of locality or visibility when tense morphology influences allomorphy.

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2.3 Eventuality of out-PREDs

In addition to these morphophonological properties of the lexical predicate PRED, there are also interpretive properties of the lexical PRED that persist in out-PRED. In particular, whether out-PRED is a stative or dynamic predicate is determined by whether PRED is stative or dynamic.[12] Stativity/dynamicity can be tested in English with the availability of a present tense (i.e., a non-habitual) interpretation. A strong generalization about standard varieties of English is that stative predicates do not occur in the progressive, without some coercion.[13] Moreover, stative verbs allow an ongoing reading in the simple present tense form, and non-stative verbs require a progressive form for this reading (Dowty 1979, *et seqq.*). Consider the data below, where an ongoing interpretation is intended in all examples:

(14) a. I just weighed Fido; he {weighs / *is weighing} 20kg.
b. I just weighed Fido; he {**outweighs** / *is **outweighing**} the other dogs here.

(15) a. All the first years arrived today and they {number / *are numbering} 250.
b. All the first years arrived today and they {**out-number** / *are **out-numbering**} the second years.

(16) a. Kay was promoted, and now they {earn / are earning} a better salary than Alex.
b. Kay was promoted, and now they {**out-earn** / are **out-earning**} Alex.

(17) a. Kelly flies every day, and right now she {*pilots / is piloting} a new plane.
b. Kelly flies every day, and right now she {***out-pilots** / is **out-piloting**} Louisa.

(18) a. Joanna is on stage and {*sings / is singing} a song from the 90s.
b. Joanna is on stage and {***out-sings** / is **out-singing**} Matty.

The ability for out-PRED to have a present tense interpretation without progressive (and its ability to occur in the progressive at all) tracks the ability of PRED to do the same. In other words, with lexically stative PREDs, out-PRED also behaves the same way.[14]

[12] This information could be stored directly in the lexical entry corresponding to the PRED, or it could be (as assume more broadly in this work) that "PRED" is a shortcut for syntactic structure of a certain size that may include information about (so-called) "lexical" stativity/dynamicity.

[13] A small set of stative predicates discussed in Dowty 1979:§3.8 can occur as progressives in standard varieties (e.g., *The book is lying on its side)*; such predicates are ignored for our purposes here. There appears to be dialectal variation, as well, such that progressive may be used with a broader set of statives. Judgments provided here are for (standard) varieties that are more restrictive regarding the usage of progressive.

[14] Related to stativity and eventuality is telicity; a canonical diagnostic for telicity is the ability to use adjuncts such as *in an hour*. Here the judgments seem to vary with respect to out-PRED. Tolskaya 2014 offers sentences like *The girl out-danced the giant in an hour* as felicitous, which she takes to indicate that *out-dance* is telic even through intransitive *dance* is not. It is difficult to know how to interpret this sort of data, since *dance* also has several telic uses as well, and it is not obvious "which *dance*" is in the input to *out-dance*. To complicate matters, not all native speakers find this example to be felicitous. For this reason, it is not clear that we can conclude with certainty that out-PRED is always telic. As such, at this point it is not clear what sorts of conclusions we can draw about telicity on the basis of the *in an hour* test, or even what the results of the test are. (See §3.4 of Kotowski 2020 for additional ambiguous results of aktionsart tests.)

(19) **Generalization 3: out-PRED and PRED match in eventuality**
The contexts in which a progressive-marked PRED can get an ongoing interpretation are the same as the contexts in which aprogressive-marked out-PRED get such an interpretation.

This suggests that PRED is controlling the availability of an ongoing interpretation, in the same way for both bare PRED cases and out-PRED cases. This is explained if the interpretive component can identify PRED as a component of out-PRED, in the derivation. Moreover, this sort of conclusion seems to be necessary, given our previous conclusion that out-PRED is formed productively, and thus cannot be listed in the lexicon with these sort of properties.

The generalization in (19) can be understood as potentially deriving from the internal structure of PRED. As a sketch of how this might work, it could be that PRED contains a verbalizer, v^0 (note that *out-strategize* shows a PRED with an overt v^0) and v^0 can be what determines PRED's eventuality as dynamic (Harley 2009). The dynamic eventuality contributed by v^0 is then maintained throughout the out-PRED derivation.[15] Further evidence for the v^0 of a PRED determining eventuality comes from patterns with PREDs that are not typically verbs and typically occur as stative predicates (e.g., *out-Mariah*, *out-smart*, *out-fox*): despite that, all of these out-PREDs bring in the meaning of '*act (like)* ___', which could be introduced by a dynamic v^0, which will then require the progressive for ongoing interpretations.

2.4 Implications of These Generalizations

At this point, the data we have seen show that out-PRED is productively formed, the allomorphs that surface in out-PRED depend on PRED's patterns of allomorphy, and out-PRED's eventuality depends on PRED's. These observations apply across cases of out-PRED, providing strong evidence that PRED is derivationally active in the formation of out-PRED. Moreover, each of these individual observations of PRED's properties persisting in out-PRED is concerned with a different domain of the formal derivation: morphosyntax (productivity), morphophonology (allomorphy), and interpretation (eventuality). Given any model of grammatical architecture (such as a Y-model) in which such phenomena can only be tied together through syntax, the out-PRED derivation must be rooted in syntax.

(20) **Meta-Generalization 1: out-PRED is syntactic**
out-PRED formation is productive and syntactic, building upon the structure for PRED.

This entails that out-PRED is a morphologically complex predicate, containing a fair amount of morphosyntactic structure for the PRED stem. This may include a verbalizer (as in *out-*[*strategize*]), a prefix (as in *out-*[*re-word*]), and whatever structural components control whether PRED is stative or dynamic. We will return to issues of the structural size of PRED in the next section, when we discuss the nature of the extended projections of both out-PRED and PRED itself.

3 The out- in out-PRED

In this section, we will shift away from comparing the linguistic properties of PRED with those of a corresponding out-PRED, and will turn to looking at generalizations that hold across instances

[15] An anonymous reviewer points out that, if the eventuality of a predicate is determined on the basis of the PRED without any arguments, this conflicts with analyses in which events are "constructed" by the direct object (e.g., Marantz 2009). I leave it to further research to explore the the present findings' impact on the question of how a predicate's eventuality is determined.

of out-PRED. These facts will help build up our understanding of the nature of the derivational mechanisms used in out-PRED formation.

3.1 The Interpretive Core of out-PRED

In this section, we will review some basic interpretive properties of out-PRED, at a level which suffice for our purposes. (For a more detailed review of the semantics of out-PRED, comparing analyses from the literature on the basis of corpus data, see Kotowski 2020.) At its most basic, "SUBJECT out-PRED OBJECT" can be roughly paraphrased as in (21).[16]

(21) **A loose description of out-PRED's meaning** (*to be refined*)
"[SUBJECT] better than [OBJECT], along some dimension of comparison appropriate for the [PRED]-type event/state"

Consider some out-PRED examples in (22), which are paraphrased with this rough interpretation.

(22) a. She **out-cooked** Julia Child. (http://bit.ly/2UvmMRi)
≈ *"She was better than Julia Child, wrt cooking-type events."*

b. Paul clearly **outwrites** John on Abbey Road and on Let it Be (https://amzn.to/2CeacyN)
≈ *"Paul is clearly better than John, wrt writing-type events on Abbey Road and on Let it Be."*

c. …the KDs will **out-glow** and **outlast** the other two. (http://bit.ly/2NUc3xz)
≈ *"The KDs will be better than the other two, wrt glowing-type events and lasting-type states."*

d. Sweet Potato **Out-Yields** Corn in Ethanol Production Study (http://bit.ly/2LElIGg)
≈ *"Sweet potato is better than corn, wrt yielding-type events in an ethanol production study."*

e. My book club can **out-drink** your book club. (http://bit.ly/1HUmVUP)
≈ *"My book club can be better than your book club, wrt drinking-type events."*

f. 78-Year-Old Natator Says He Can **Outfloat** Rivals (http://bit.ly/1FJXJ2w)
≈ *"A 78 year old natator says he is better than rivals, wrt floating-type events."*

The dimension along which the subject is/does better than the object is left underspecified, and can be contextually determined. For example, in (22a), it could be that *she* was faster than *Julia Child*, if there was a competition of speed. Alternatively, if the comparison is on the dimension of taste, then *she* had a better result of cooking than *Julia Child*. Similarly, in (22f), the 78 year old may

[16] An interpretation is provided only for the out-PRED phenomenon investigated here. There are other, categorically-distinct predicates with a surface-similar *out-* prefix, including a directional *out-* prefix (as in *outsource* and *output*). There is also an *out-* prefixed predicate that can take as its object a particular value on a scale of comparison, as in (i):

(i) Both of these two portfolios outperformed the market average… (http://bit.ly/2vv2kVm)

Here *the market average* is not interpreted as participating in the event (thereby not conforming to the interpretation in (21)). The out-PRED phenomenon investigated in this paper does not allow this: e.g., **John outran the average time*. Also unlike other out-PREDs, the *out-perform* in (i) cannot be easily passivized (*?*The market average was outperformed…*); see (72)–(69) and surrounding discussion. Kotowski (2020) argues that such data suggest an "interpretational cline" for the semantics of out-PRED (whereby out-PRED interpretations can be comparative and/or resultative). Instead, this work argues that data like (i) appear to be a separate (though perhaps related) phenomenon, on the basis of syntactic properties (such as the inability to passivize, as just mentioned). In other words, there may be different types of out-PRED: one that is a comparative meaning (with all the syntactic properties investigated here) and another with a resultative meaning (as suggested by other works, such as McIntyre 2003, Marantz 2009, and Tolskaya 2014). It may be worth noting that many of the attested corpus examples that Kotowski analyzes as requiring a resultative meaning are not acceptable to all speakers, again suggesting that such examples may require a different derivation.

believe *he* can have more of his body above the surface of the water, as compared to *his rivals*, or perhaps *he* can float for a longer period of time.

The rough paraphrase in (21) resembles a comparative, whereby the target and standard of comparison map onto the subject and object of out-PRED, respectively; more specifically, it is a "scalar-comparative analysis" (cf. Kotowski 2020), in which the scale and dimension of comparison is contextually determined on the basis of the PRED base.[17] In this way, it is not entirely surprising that both the objects and the subjects of out-PRED are construed as having the same thematic relationship to PRED. For example, in (22a), both *she* and *Julia Child* are interpreted as agents in cooking events, when they are being compared along a dimension of speed of cooking.

While *she* and *Julia Child* can both be interpreted as agents in this case, out-PRED does not impose any particular thematic roles on the subject or object. That is, the subjects and objects of out-PRED can be construed as having a range of semantic relations to an event. For example, the subject and object can be construed as an agent or causer, (23), a patient or theme, (24),[18] an experiencer, (25), or a holder, (26).

(23) Agents of an event

a. Gorbachev is **outmaneuvering** his critics. (http://trib.in/1EGgwq6)

b. In all seriousness tho, can CB **outdance** Janet? (http://bit.ly/2TBX4h1)

(24) Themes of an event

a. This hard stone **out-sparkled** even more costly precious gems [...] (http://bit.ly/310YpyS)

b. I still think Samsung's hardware **outshines** its software. (http://bit.ly/2Gvjg6b)

(25) Experiencer of an event

a. Students [doing X] **outrecalled** students [doing Y]. (http://bit.ly/1btQXRZ)

b. And a bear can **out-smell** even a bloodhound. (http://bit.ly/1BMPvz3)

(26) Holders of a state

a. This food **outlasts** even a Twinkie. (http://bit.ly/1OyYvSw)

b. Mobile devices **outnumber** people (https://n.pr/2d6BvQ1)

The subject and object in a given out-PRED clause generally share the same relation to that sort of event/state. Consider the out-PRED *outsell*, as in (27):

(27) a. He **outsells** all our other salespeople. (http://bit.ly/1CqpKJV)

b. Mustangs are **outselling** all other pony cars now. (http://bit.ly/2O4OQaY)

c. # Mustangs **outsell** all our salespeople.

The subject and object could be construed either as agents, as in (27a), or as patients, as in (27b). However, you cannot mix these: (27c). In order for (27c) to be coherent, either *Mustangs* would need to be a possible agentive seller, or *salespeople* would need to be a possible patient of selling.

This "sameness" in thematic relations to a type of event, where it is found, is not a hard-coded constraint of the grammar of English. Instead, it derives from the fact that the PRED suggests an immediately accessible event/state type for which a dimension of comparison is constructed. (For example, in the case of *sell*, the dimension could be ability to persuade people to buy something,

[17] For further discussion of the comparative interpretation of out-PRED, see Kotowski 2020 and reference therein.
[18] We treat emission verbs like *shine* and *sparkle* as "theme unergatives", following Levin & Rappaport Hovav 1995.

as in (27a), or it could be the number of individual items sold, as in (27b).) This derives sameness effects, while being flexible enough to allow for examples in which out-PRED's arguments do not have a thematic relationship with PRED at all – as we will see in the next section.

We can summarize the interpretive characteristics of out-PRED as (28).

(28) **Generalization 4: Interpretative Core of out-PRED**
The subject and object of out-PRED are construed as having the same semantic relation to comparable sorts of event/state, and the subject is evaluated doing or being better than the object, along a contextually determined dimension.

Having discussed how the subject and object of out-PRED are construed thematically in relation to a PRED-named event/state, next we turn to how these arguments formally compose in the out-PRED clause, at the syntax-semantics interface.

3.2 Arguments of out-PRED

Before delving into the argument structure of out-PRED, let us clarify what can be meant by "argument", for which we distinguish two usages. Syntactic arguments are constituents that merge in specific "argument positions" in the extended projection of a predicate (e.g., in specifier positions of the XPs comprising the predicate). Semantic arguments are participants in a state/event that bind semantic variables associated with the predicate (e.g., variables introduced by thematic role assigning functions). Concerning how these two concepts relate, the stance taken here is that, if a syntactic constituent occurs in a syntactic argument position (e.g., Spec,XP), its semantic value composes with a function at LF (e.g., saturating the open variable introduced by the X^0s in the predicate's extended projection). In this view, the locations of the open variables in semantic composition emerge from the syntactic position of the argument-introducing X^0s and their interpretation; as such, whenever X^0 is not syntactically merged, there is no variable to bind/saturate. In other words, this is a syntax first model, whereby semantics maps syntactic elements onto arguments of functions (and not vice-versa; i.e., it is not the case that syntax rises to meet semantic demands of a predicate). We will come back to the idea of argument structure and syntactic valency in §4.1.

Because the arguments of out-PREDs are construed as participating in events/states that "PRED" names (cf. Borer 2005a), one might expect them to be syntactic and semantic arguments of that PRED. (After all, this is what happens as a general case with PREDs and their arguments.) This expectation has been built into the two sorts of syntactic analyses proposed for out-PRED. In the first, what we will call a comparative deletion approach (cf. Irube 1984, Baker 2019), would place both the subject and the object of out-PRED in the subject position for (different copies of) PRED:

(29) A sketch of the syntax of '*CB out-danced Janet*', under a comparative deletion approach:
[CB [danced [out- [Janet ~~danced~~]]]]

On another analysis, what we will call a resultative approach (cf. McIntyre 2003, Marantz 2009, Tolskaya 2014), the subject of out-PRED is treated as the subject of PRED, but the object of out-PRED is not an argument of PRED at all, but is instead in a predication relationship with *out-*.

(30) A sketch of the syntax of '*CB out-danced Janet*', under a resultative approach:
[CB [danced [Janet out-]]]

(This approach requires additional movement(s) to yield the appropriate word order.) Motivation for this comes from examples like '*John outran the bus*', where the bus doesn't run (Marantz 2009). However, similar to how such data can be used to argue that the object of out-PRED is not an argument of PRED, we can —perhaps surprisingly— argue that the subject is similarly not a syntactic

argument of PRED (even if it appears to be a semantic one). This is demonstrated with some representative examples below, showing that the *X out-PREDs Y* doesn't always entail *X PREDs (Z)*.

(31) a. I can **outpace** the bus on my bike.

b. # I pace on my bike.

c. (a) does not entail *The bus paces*

(32) a. Aircraft carriers can **out-run** almost any other boat.

b. # Aircraft carriers can run.

c. (a) does not entail *Almost any other boats run*

These entailment facts indicate that how the out-PRED's arguments compose with the meanings of *pace* and *run* differs between out-PRED contexts and PRED contexts. This would not be straightforwardly understood if the subject and object of an out-PRED were semantic arguments of the PRED core.

In addition, the examples below show cases where the subject of the out-PRED, in the (a) examples, cannot occur as an argument of the PRED otherwise, in the (b) and (c) examples.

(33) a. Atlanta also **out-rained** Seattle in 1922 and 1923. (https://wxch.nl/2F48mls)

b. * Atlanta rained.

c. * It rained Atlanta.

(34) a. The rise in movie ticket prices has **outpaced** inflation[…]. (https://nyti.ms/34lqDVF)

b. * The rise in movie ticket prices has paced inflation

c. * The rise in movie ticket prices has paced (itself).

(35) a. I was **out-numbered**.

b. * I was numbered (one).

c. * I numbered (one).

(36) a. You **out-muscle** us.

b. * You muscle.

c. * You muscle {them/ourselves/…}.

(37) a. We **out-smarted** them.

b. * We smarted.

c. * We smarted {them/ourselves/…}.

(38) a. She **out-Einstein'd** Einstein.

b. ? She Einstein'd.[19]

c. * She Einstein'd {him/herself/…}.

Since the subjects of the out-PRED clause are not always well-formed arguments in a PRED clause, we should avoid analyses of out-PRED like those sketched out (29) or (30), which treat the subject of the out-PRED clause as first merged as the syntactic subject of PRED. (We will see additional evidence for this in §5.1.)

[19] While this is not completely unacceptable, it is notable that using *Einstein* as a verb is certainly degraded. This importantly contrasts with *out-Einstein*, which is fully acceptable.

This is quite different from other verbal prefixes like *over-* and *re-*, in which prefixation does not affect entailment or ability to be an argument.[20]

(39) a. They over-cooked the fish.

b.✓ They cooked the fish.

c. (a) entails *They cooked the fish*

(40) a. The computer program was re-run.

b.✓ The computer program was run.

c. (a) entails *The computer program was run*

This suggests that the syntax of *over-* and *re-* is such that argument structure is not fundamentally different between over-PRED/re-PRED and PRED (see Tolskaya 2014, Marantz 2009), while the argument structure for out-PRED is fundamentally different than PRED.

In other words, the subject and object of out-PRED do not sit in any syntactic argument position of PRED, nor do they saturate any lambdas associated with PRED. Instead, "PRED" may invoke relations with other entities (at a conceptual/pragmatic level) – this something that can be done with PRED without relying on syntactic or semantic structures. The arguments of *out-* can map onto these conceptual relations, via pragmatic reasoning. This is how we can build *out-rain*: *rain* introduces no syntactic/semantic arguments, but '*Atlanta out-rained Seattle*' construes Atlanta and Seattle as conceptually related to raining.[21]

If the arguments of out-PRED are not syntactic or semantic arguments of PRED, then we ought to wonder what they <u>are</u> syntactic/semantic arguments of. Based on the observations that led to the paraphrastic interpretation in (21), it stands to reason that they are arguments of a comparative predicate, that corresponds to the *out-* prefix. This predicate asserts that the external argument exceeds the internal argument on a scale of comparison.[22] As for this dimension of comparison, it is identified on the basis of the context, the PRED, and the conceptual information about how individuals participate in PRED-named events/states.

In other words, while y $>^c$ x, x and y are not semantic or syntactic arguments of PRED; PRED constrains the dimension of comparison and types of events the object and subject can be engaged in. This same conclusion is reached in Kotowski 2020: "While many examples suggest comparative interpretations, comparison does not arise on the basis of events or verbs, but on the basis of scalar dimensions evoked by the base in combination with what is given in the surrounding context" (*ibid.*:p.14). A sketch of this meaning for *out-* is provided in (41), and a structure for the meaning of *out-sing* is provided in (42):

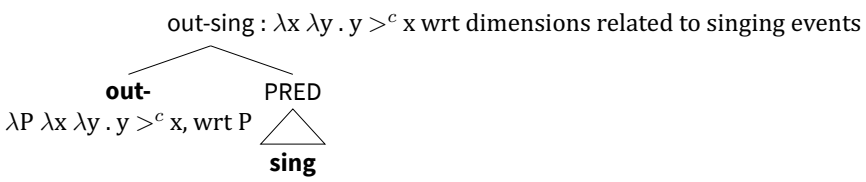
(41) **Formal meaning of *out-* in out-PRED**
$[\![\text{out-}]\!] = \lambda P\ \lambda x\ \lambda y\ .\ y >^c x$, with respect to dimensions determined by context and P-named events/states

[20] *Re-think* constitutes a counterexample to this —*re-think* takes a nominal object and *think* takes a prepositional object— and it seems to be the sole counterexample.

[21] For a different view on the syntactic argument structure of *rain*, see Krejci 2014, Levin & Krejci 2018, inter alia. Regardless of the precise nature of how many arguments predicates like *rain* may have, the contrast between **Atlanta rained* (as in (33b)) and ✓*Atlanta out-rained Seattle* (as in (122a)) indicates that the syntactic argument structure of out-PRED is entirely distinct from that of PRED.

[22] See Tolskaya 2014 for discussion and a similar idea, but a formalization that seems unable to account for the range of data presented here (especially the data in §5).

(42)



In this derivation, *out-* composes with two arguments: the subject and the object of the out-PRED clause.[23] On the other hand, the lexical PRED in out-PRED (*sing*, in this case) serves only to provide suggestions about the scale along which the subject and object should be compared. Neither the subject or object of out-PRED is composing with *sing*.

In this way, it is not the case that that the PRED specifies taking two arguments of the same thematic role – the arguments are not arguments of the PRED. Nor does out-PRED take two arguments of the same thematic role – *out-* composes with two arguments, and their thematic construal is a matter of pragmatic reasoning, when relating those compared elements to a type of event/state.

The results of the investigation into argumenthood here lead to a new generalization, given in (43).

(43) **Generalization 5: Arguments in out-PRED**
Arguments in out-PRED are arguments of *out-*, not arguments of PRED.

This accounts for why *X outruns Y* need not entail *X runs* in (32): X is an argument of *out-* in *X outruns Y*, not of *run*.

At the same time, one may wonder why, in contrast to *run*/*outrun*, we do find apparent contradictions in follow-ups to (44a) like (44b–c):

(44) a. Joanna **out-sang** Matty last night …

b. # … but Joanna didn't sing last night.

c. # … but Matty didn't sing last night.

Thus in order to maintain the generalization in (43), we need an explanation for the infelicity of (44b–c) that does not require *sing* to introduce any arguments in *outsing*. To see how this might work, consider the contradictory followups below to a different sort of comparative-like context:

(45) a. Joanna was better at karaoke than Matty last night …

b. # … but Joanna didn't sing last night.

c. # … but Matty didn't sing last night.

The contradiction in the followup in (45b) does not arise from the derivation of (45a) having an argument structure that encodes a semantic representation like ⟦sing⟧(⟦Joanna⟧,e). Instead of owing to argument structure, the contradictions in the follow-ups in comparative cases like (45b–c) can be due to the interpretive relations set-up by the shared comparative semantics. Extending this analysis to out-PRED cases like (44b–c), we can maintain an understanding where the arguments in out-PRED are not arguments of PRED.[24]

[23] In this analysis, the denotation of *out-* provides the semantic variables that are bound by the interpretation of the elements that syntactically merge in IntArgP and ExtArgP. It could also be that the IntArg^0 and ExtArg^0 are the projections where the variables are introduced. This paper will not adjudicated between these two analyses.

[24] Note that in both (44) and (45), there are non-contradictory (joking) ways in which these can be interpreted. In the (a) cases, it could mean that Matty was so bad at karaoke that even though Joanna didn't sing, she sang better than him. For the (b) cases, it could mean that Joanna was better than Matty at karaoke because he didn't even sing. These non-contradictory readings, to the degree that they are plausible and felicitous, apply equally to both (44) and (45), making the same point – examples like (44) do not indicate that *sing* takes syntactic/semantic arguments in the context of *out-sing*.

The following sections provide further evidence of this novel analysis that the subject/object of out-PRED are arguments of *out-*, which will later play a role in understanding when out-PRED is blocked.

3.3 out-PRED's Syntactic Argument Structure

In the previous section, we saw some interpretive evidence that out-PRED is a complex predicate, composed of the *out-* comparative predicate and the PRED lexical predicate, and that the subject and object of the clause are arguments of the *out-* predicate. In addition to these interpretive facts, we will see that the argument structure of out-PREDs has consistent syntactic properties. These syntactic properties may differ from from those of the stem PRED, again providing evidence that the argument structure of the out-PRED clause is controlled by the *out-* predicate.

In brief, the relevant observation is that, while out-PREDs can be formed with PREDs that can otherwise occur in an array of argument structures, out-PRED is always mono-transitive. (A generalization also suggested in Bresnan 1980, albeit in somewhat different terms.) To demonstrate this, let us consider some lexical PREDs that typically occur in particular argument structure frames, and compare those usages with the out-PRED usages.

We will first consider PREDs that typically occur in intransitive clauses. Consider the unaccusative usages of the predicates in the (a) examples below, and the out-PREDs that build on top of those unaccusative interpretations in the (b) examples.[25]

(46) a. The fidget spinner will spin when you click on it. (http://bit.ly/2WipPBw)

b. […] the r188 bearing spinner will **out spin** the 608 spinner. (http://bit.ly/2Komx8J)

(47) a. Trump polled in the high 30s and low 40s. (https://bit.ly/3wDDgtm)

b. Biden **out-polled** Trump. (https://politi.co/3wHISCO)

(48) a. After being dropped, a tennis ball will bounce.

b. This particular ball will **out bounce** a tennis ball any day[…] (http://bit.ly/2rbXwFX)

(49) a. […] the Mustangs are selling, but I have yet to see one […] (http://bit.ly/2WnAbAc)

b. Mustangs are **outselling** all other pony cars now. (http://bit.ly/2O4OQaY)

(50) a. The signs hung for a long time.

b. The signs with name-brand tape **out-hung** those with store-bought tape.

Continuing with PREDs that typically occur as intransitive, out-PRED can have a meaning that builds on top of an unergative usage of PRED:

(51) a. The students will think (about syntax).

b. The students will **out-think** the teachers.

[25] By "unaccusative", what is meant is simply that an internal argument ends up as the subject, without passive voice. In this way, it is a cover-term, encompassing anticausatives, ergatives, etc. It is also worth noting that an unaccusative need not have an internal-causation interpretation in order to occur in out-PRED. For example, with *sell*, the following context would block an internal-causation reading, but *out-sell* is still acceptable with arguments that are construed as patients of *sell*; this is demonstrated in an example like: *Because Jaguar has been bribing car salespeople, Jaguar cars now out-sell other sportscars*.

(52) a. Sleeping Beauty slept (a long sleep).

b. Sleeping Beauty **outslept** the dwarfs.

(53) a. The stone sparkled. (http://bit.ly/30WPSN7)

b. This hard stone **out-sparkled** even more costly precious gems [...] (http://bit.ly/310YpyS)

(54) a. I think the hardware shines. (https://tcrn.ch/2GwZDum)

b. I still think Samsung's hardware **outshines** its software. (http://bit.ly/2Gvjg6b)

As a final case of PREDs that occur in intransitive clauses, let us consider a nominal and an adjectival PRED. (Note that, as with the other (verbal) intransitive PREDs, the derived out-PRED is verbal: it bears tense morphology and can directly introduce an object.)

(55) a. Kanye is gonna be Kanye. (http://bit.ly/3fR5kCJ)
≈ "*Kanye will behave in a typical 'Kanye' way*"

b. Kanye is gonna **out-Kanye** himself.
≈ "*Kanye will behave in a typical 'Kanye' way to a greater degree than he normally does*"

(56) a. In these movies, the little kid is always smart.

b. [...] the little kid always **outsmarts** the bad guys in the end. (http://bit.ly/2EVLNzy)

Moreover, other nominal PRED stems of out-PRED cannot occur as the main predicate of a clause at all, and thus cannot take an object. These are cases like *outwit*, *out-gun*, *outfox*, and *outclass*:[26]

(57) a. Road Runner is always going to **outwit** him. (http://bit.ly/2I3j2mt)

b. [...] the Kree **out gun** the Chitauri. (http://bit.ly/2K3DeqB)

c. We **outfoxed** the party leaders (https://reut.rs/2wDAEyP)

d. 'Blade Runner 2049' **outclasses** original (http://bit.ly/2XG2mXi)

These typically nominal and adjectival PRED stems in (55)–(56) do not occur with objects in contexts beyond out-PRED, while the out-PRED that contains them must have an object. Thus these data are fundamentally the same as all other PREDs we have seen that do not typically occur with objects, in (46)–(54): the out-PRED clause always has an object.[27]

In addition to PREDs that typically occur without objects, PREDs that typically do occur with objects can also occur as out-PREDs.[28] As before, the out-PRED clauses are mono-transitive. More-

[26] There appears to be a prepositional sort of meaning in these cases: *outwit* and *outgun* could be paraphrased as *is with better wit/guns*, *outclass* as *be in a better class*, and *outfox* as *to be more like a fox*.

[27] There are cases of what, at the surface, may seem like exceptions to this, where out-PRED has no overt object: *Aguila Ammo never fails to out perform.* (`http://bit.ly/2FoR4Ad`). Such cases have an arbitrary/generic interpretation for the object, sharing characteristics with the class of predicates called PRO-arb Object Alternation verbs in Levin 1993.

[28] It has been suggested that what is happening in these cases is that the verbs are being coerced into an intransitive activity reading or are first "detransitivized" (e.g., Bresnan 1980). Without disagreeing, such an intuition begs an analysis of what it means to coerce an activity reading or to detransitivize a predicate in a non-lexical model of morphosyntax. In fact, the analysis that will be promoted in this work can be seen as an analysis of the derivation that achieves such a coercion. This paper takes the position that it must be that morphosyntax is involved in building the argument structure of any predicate, including out-PRED (and so this is not a problem to be dealt with in the lexicon or in the semantics), given the morphosyntactic properties/constraints on the availability of out-PRED, as in §2 and §5. Note that this does not mean there is no work to be done by the lexicon and/or semantics/pragmatics. In fact, PRED and encyclopedic knowledge of the associated vocabulary items bring conceptual information about argument structure, as alluded to in §3. In particular, the PRED may be associated with conceptual structures where there are commonly participants of particular thematic roles. (Similar ideas of conceptual structure are discussed in Ackema & Schoorlemmer 2006.) These effects are witnessed by data like '*She out-stared me, #but nothing was stared at.*', suggesting that

over, as shown in the (c) examples below, the sort of object that can normally occur with PRED cannot occur as an object in out-PRED.

(58) a. This radiator cools car engines.

b. [This radiator] **outcools** my stock radiator significantly (http://bit.ly/1FVRSpF)

c. This radiator **outcools** (*car engines) my stock radiator (*car engines).

(59) a. My friend and I were in staring contests against her mother. I stared at her mother, and then she stared at her mother.

b. She **out-stared** me.

c. She **out-stared** (**at her mother*) me (**at her mother*).

(60) a. He spent his inheritance.

b. He **outspent** his siblings.

c. He **outspent** (**his inheritance*) his siblings (**his inheritance*).

(61) a. Fido weighs 20kg.

b. Fido **outweighs** Rex.

c. Fido **outweighs** (**20kg*) Rex (**20kg*).

(62) a. Iron Man 2 grossed $625million.

b. Iron Man 2 **outgrossed** Iron Man 1.

c. Iron Man 2 **out-grossed** (**$625million*) Iron Man 1 (**$625million*).

In addition to the "suppression" of the canonical object of a robustly transitive PRED like *spend*, there is no regular way in which these "deep objects" can be expressed in out-PRED clauses. (Contrast this with the "deep subject" of a passive; a by-phrase can be regularly used to express that in a passive clause.) Instead, if an out-PRED clause contains what could be an object of the transitive PRED, this is only achievable through periphrastic means, as in (63).

(63) a. This radiator **outcooled** my stock radiator, when it comes to my car engine.

b. She **out-stared** me, in a contest to stare at her mother.

c. He **outspent** his siblings, using his inheritance.

d. Fido **outweighs** Rex, at 20kg.

e. Iron Man 2 **outgrossed** Iron Man 1, by grossing $625million.

Given the variety of ways in which these objects are introduced in (63), it seems unlikely that the objects in the out-PRED clauses are "deep objects" of the PRED at some earlier stage of syntactic derivation.

Though out-PRED fbe formed with such robustly transitive PREDs, the acceptability is sometimes constrained by recoverability of the internal argument(s). For example, the examples in (64) and (65), with the robustly transitive verbs *produce* and *hit*, are greatly improved in acceptability, when the context makes clear what is produced or hit. For example, even if (64b) were spoken out-of-the-blue, *at the batting cages* should provide enough context (for those familiar with batting cages)

√STARE comes with either a semantic variable corresponding to the participant that is looked at, and/or it is conventionalized to associate with conceptual structures in which something is being stared at. (Thanks to an anonymous reviewer for bringing this sort of data to my attention.)

for the listener to understand that *out-hit* likely means *hit baseballs more regularly / farther*.

(64) [*Spoken out-of-the-blue*]

a. ?France usually **out-produces** Italy.

b. ✓Speaking of red wine, France usually **out-produces** Italy. (http://bit.ly/1BMLive)

(65) [*Spoken out-of-the-blue*]

a. ?I can **out-hit** you.

b. ✓I can **out-hit** you, at the batting cages.

This demonstrates that an out-PRED built on a robustly transitive PRED is most acceptable when the missing object of PRED is recoverable from context. (This is likely connected to the fact that the comparative meaning of *out-* is deeply context-dependent; see discussion in §3.2.)

Similar findings about valency in out-PRED hold for PREDs that typically occur in ditransitive frames: the resulting out-PRED is mono-transitive, and any objects that could normally appear with PRED are absent in out-PRED clauses.

(66) a. Jackie donated money to museums.

b. Jackie **outdonated** Lisa.

c. Jackie **outdonated** (**money*) (**to museums*) Lisa (**money*) (**to museums*).

(67) a. We gave blood to the Red Cross.

b. We **outgave** one of the local hospitals. (http://bit.ly/1NipVst)

c. We **outgave** (**blood*) (**to the RC*) one of the local hospitals (**blood*) (**to the RC*).

What these results with (typically) transitive and ditransitive PREDs in (58)–(67) show us is that the types of objects that can occur in out-PRED are distinct from those that PRED supports. Instead, all out-PREDs introduce their own objects (ones whose interpretation we discussed in §3.1).

To summarize, all out-PRED clauses have a particular syntactic argument structure, which is shared no matter what kind(s) of argument structure PRED can occur in otherwise.

(68) **Generalization 6: Valency of out-PRED**
out-PRED is obligatorily monotransitive, regardless of PRED's typical syntactic argument structure(s).

This means that out-PRED's argument structure can be defined uniquely, apart from the argument structure of PRED. This will impact our understanding of the nature of argument structure syntax and how to make (what appear to be) obligatory objects of a predicate (not) surface in a clause.

3.4 Passivization and out-PRED

We have now seen evidence that *out-* controls the syntactic and semantic arguments in an out-PRED clause. An important (and previously unnoted) fact to be considered alongside this is the fact that all out-PREDs can be passivized, regardless of whether the PRED stem can be. In the data below, the (b) examples show a sometimes unsuccessful attempt at passivizing the PRED as used in (a), and the (d) examples show consistently successful passivizations of the out-PRED in (c).

(69) a. She cooked tofu.

b. Tofu was cooked (by her). [Passive PRED]

c. She **out-cooked** Julia Child.

d. Julia Child was **out-cooked** (by her). [Passive out-PRED]

(70) a. My fidget spinner spins on this ball bearing.

b. *This ball bearing is spun on by my fidget spinner. [*Passive PRED]

c. My fidget spinner **out-spins** yours.

d. Your fidget spinner is **out-spun** by mine. [Passive out-PRED]

(71) a. Titanic 2 didn't run in theaters for a very long time.

b. *Theaters weren't run in for a very long time (by Titanic 2). [*Passive PRED]

c. Titanic 2 didn't **outrun** Titanic, which ran for a very long time.

d. Titanic, which ran for a very long time, wasn't **outrun** by Titanic 2. [Passive out-PRED]

Note that passivizability in English requires more than having a surface object. Consider examples with the robustly transitive verb *number*. Outside of out-PRED contexts, it cannot be passivized; however, *out-number* can be passivized.

(72) a. By mid-September, they numbered 10,000.

b. *By mid-September, 10,000 were numbered (by them). [*Passive PRED]

c. By mid-September, they **out-numbered** us.

d. By mid-September, we were **out-numbered** (by them). [Passive out-PRED]

Even weather predicates in an out-PRED, such as *out-snow*, can support a passive, as in (73d); even though *snow* outside of out-PRED does not support passivization, as in (73b):[29]

(73) a. It snowed heavily in Texas.

b. *Texas was snowed heavily in (by it). [*Passive PRED]

c. Places in Texas and Oklahoma have **out-snowed** Kodiak, Alaska.

d. Kodiak, Alaska [has been] **out-snowed** by places in Texas and Oklahoma. (http://bit.ly/2IAyF3S) [Passive out-PRED]

These data are representative of the fact that out-PRED can always be passivized; this is stated in the generalization in (74):

(74) **Generalization 7: Passivizability of out-PRED**
out-PRED can always be passivized, even if PRED cannot be.

This generalization is not completely reducible to the fact that out-PRED is always transitive. While passive requires a certain number of arguments in English, having a subject and object is not enough to allow for passivization. This is demonstrated in (72), where a verb with both a subject and an object cannot be passivized. (See Ahn & Sailor 2014 for a description of other transitive clauses that also resist passivization.) The general consensus is that what yields passive clauses is syntactic material that is high in a predicate's extended projection (e.g., Kratzer 1996, Collins 2005, Pylkkänen 2008, Harley 2013). Because passivization can always apply to an out-PRED, it

[29] When there is a malefactive argument, a weather predicate can support a short passive: *We were snowed on (*by it).* Note that in such cases, a long passive, with "weather *it*" in a *by*-phrase is still unacceptable.

must be that some properties of out-PRED's extended projection are constant across out-PREDs, such that passives are possible.

In this way, what is passivized in these examples is the entire out-PRED. This implicates an analysis in which the out-PRED constituent is syntactically constructed before any syntactic triggers of passivization merge. In other words, passive is in the extended projection of *out-*, and in the extended projection of PRED, below *out-*. This is schematized in (75).

(75) [PASSIVE [*out-* [PRED]]]

This can explain why the argument "inversion" in passive out-PREDs applies to the arguments of *out-*, and not to those of PRED; the active out-PRED in (76a) is passivized as (76b), but not as (76c) or (76d).

(76) a. Sam's sister often **out-performs** him at karaoke.

b. Sam is often **out-performed** by his sister at karaoke.
(= *His sister often performs better than him at karaoke*)

c. *Pop songs are often **out-performed** by his sister at karaoke.
(≠ *His sister often performs better, and pop songs are often performed by her*)

d. *Pop songs are often **out-performed** by ballads at karaoke.
(≠ *Ballads are often performed better than pop songs*)

If passive were below *out-*, in the extended projection of PRED, we might expect to be able to have an object of *perform* as the surface subject in the passive, with the performer in the *by*-phrase; this is impossible, as in (76c). Another possible outcome of passivizing the PRED itself might be to have an object of *perform* as both the surface subject and the *by*-phrase; this is once again impossible, as in (76d). (We will return to out-PRED passives in §6.1.3.)

3.5 Instrumental Adjuncts and out-PRED

Passivization has provided some evidence that the extended projection in an out-PRED clause is controlled by the *out-* (i.e., what is in common between all instances of out-PRED), and not by the PRED. With this in mind, we might also expect other shared properties across out-PRED clauses: i.e., ones that hold regardless of the properties of clauses that PRED otherwise occurs in.

One area where this prediction is borne out concerns instrumental adverbials. An informative case is that out-PRED allows *with*-PPs to serve as instrumental adjuncts (the (b) examples below) even where PRED does not (the (a) examples below).

(77) a. #They had many guns yesterday with fully automatic assault rifles. (#*instrumental with*)

b. They outgunned the officers with fully automatic assault rifles. (http://bit.ly/2KFhMr8)

(78) a. #David was smart with limited weapons. (#*instrumental with*)

b. […] the much smaller David **outsmarted** him with limited weapons. (http://bit.ly/1OXjYI1)

In a case like (78a), the PP cannot be given an instrumental interpretation (i.e., one indicating that David used limited weapons to be smart). This is because instrumental PPs depend on the structure related to agentivity that is high up in the extended verbal projection (see, e.g., Reinhart 2016), which a stative adjectival predicate like *smart* does not occur with. However, *out-smart* in (78b) does have an agentive argument, introduced by *out-*. In other words, an instrument PP in cases like (78b) is licensed high up in the verbal domain, which *out-* projects, but which PRED does not.

Moreover, it is not just which adverbial interpretations are available, but which are not. Even with PREDs that normally support an instrumental PP, the instrumental PPs in out-PRED are not able to modify PRED alone.

(79) Katie ate (pizza) with a fork

(80) Katie **out-ate** Pete with a fork.

a. $\neq$ In terms of eating with a fork, Katie out-did Pete.

b. $\approx$ In terms of eating, Katie out-did Pete, and she out-did Pete using a fork.

What (79) shows is that *eat* can support an instrumental PP, when it occurs as the main clause predicate. However, in *out-eat* clauses like (80), an instrumental PP does not modify the *eat* PRED. If it were able to, the interpretation should be as in (80a): where *out-* scopes over *eat with a fork*. Instead the only interpretation is in (80b), where the instrumental scopes over *out-*.

A new generalization that encompasses these facts about instrumental adverbial modifiers is given in (81):

(81) **Generalization 8: Instrumentals in out-PRED**
out-PRED clauses may allow instrumental adverbial modifiers differently than corresponding PRED clauses.

As adverbial modifiers are tied closely to syntactic structure, this suggest that out-PRED clauses can support instrumental adverbials in the extended projection of *out-*. This is further evidence that the bulk of the structure of the out-PRED clause is determined by *out-*. This result also suggests that the embedded PRED in out-PRED does not project enough structure to support an instrumental adverbial. Since, as has been already mentioned, instrumentals depend on structure for agents, this suggests that the structure comprising PRED in out-PRED doesn't include agent-introducing structure. This provides additional converging evidence that the extended projection of PRED in out-PRED is structurally quite small.

3.6 Implications of These Generalizations

In this section, we have seen evidence that out-PRED clauses share properties of interpretation, argument structure, passivizability, and adverbials. The fact that these shared properties hold across out-PRED clauses suggests that it is *out-* (the shared component of out-PREDs) that controls these properties. This is given in the following meta-generalization.

(82) **Meta-Generalization 2: *out-* is the core of out-PRED clauses**
The argument structure, and the extended verbal projection more generally, of an out-PRED clause is controlled by *out-* (and not by PRED).

In this way, we will pursue an analysis of the out-PRED clause in which the extended projection of the matrix predicate has *out-* at its core. Notably, any analysis in which the subject of out-PRED is an argument of PRED is controverted by this generalization.

4 Deriving out-PRED Generalizations

In §2–3 we uncovered facts and generalizations about productivity (8), allomorphy (12), stativity (19), interpretation (28), predicate-argument relations (43), argument structure (68), passivization (74), and adverbials (81). The key ideas of these findings are represented in two meta-

generalizations, repeated below.

(20) **Meta-Generalization 1: out-PRED is syntactic**
out-PRED formation is productive and syntactic, building upon the structure for PRED.

(82) **Meta-Generalization 2: *out-* is the core of out-PRED clauses**
The argument structure, and the extended verbal projection more generally, of an out-PRED clause is controlled by *out-* (and not by PRED).

In the most general terms, we saw that PRED is derivationally active and responsible for syntactically low ("lexical") properties, such as root allomorphy and eventuality, but does not project any arguments in the syntax. On the other hand, *out-* is responsible for syntactically higher properties (monotransitive argument structure, passivizability, and instrument adverbial licensing). Moreover, it was noted that PRED in out-PRED cannot be passivized nor can it license its own high adverbials, indicating that the structure of PRED in out-PRED is truncated (perhaps that of a simplex XP). In the remainder of this section, we will describe an analysis that allows PRED to control low syntactic properties, while allowing *out-* to control higher properties.

Before discussing the analysis, we will briefly review some properties of the adopted grammatical model.

4.1 Some Adopted Views

The first view that this work adopts is that syntactic structures that have been built cannot be destroyed, as a result of subsequently merging a syntactic morpheme. This coheres with a monotonicity hypothesis from Harley 2013 (pp.37-38, citing a parallel generalization in Koontz-Garboden 2007): "Syntactic structure-building is inherently monotonic: you can add to existing structure, but sub-parts of an existing tree cannot be deleted by the addition of morphological structure". More generally, such a destruction of syntactic structure would violate the No Tampering Condition and the Extension Condition (cf. Collins & Stabler 2016). This has consequences for how "argument suppression" operations (as described for, e.g., passives, middles, inchoatives, etc.) can be modeled in syntax. In particular, this means that such operations cannot involve building a transitive structure containing two arguments, and later merge a valency-reducing feature to delete/destroy a previously merged argument.

A second set of views adopted here, which will require slightly more discussion, relates to the relationship between morphophonological forms and morphosyntactic structures. This work assumes a 'late-insertion'/'realizational' model of morphology.[30] In such a model, the narrow syntax builds up abstract structures, on the basis of abstract syntactic features.[31] Within the narrow syntax, the resulting morphosyntactic structures do not contain any information about morphophonological forms. In this way, the direct input and direct output of narrow syntax lack phonological features. Instead, the morphophonological forms realize morphosyntactic structures. (This is also described as morphophonological forms being inserted late into linguistic structure: after syntax.) To demon-

[30] Realizational models employ rules sensitive to feature bundles and local context to choose an appropriate morphological exponent for those features in that context. Such models have been implemented in various ways, including as relating exponents to spans of syntactic heads (e.g., Bye & Svenonius 2012, Svenonius 2012, Ramchand 2018) or to terminal nodes (e.g., Halle & Marantz 1993, Marantz 1994, Embick 2010, Arregi & Nevins 2012, Bobaljik 2012). The precise implementation of the realizational model does not have direct bearing on the matter at hand (out-PRED).

[31] In addition to abstract syntactic features, information about particular lexical roots may be necessary to distinguish otherwise syntactically identical elements (e.g., *couch* and *sofa* may not differ in their formal morphosyntactic features).

strate some of the benefits of this sort of model, consider the range of grammatically distinct contexts that the form *sell* can occur in, in (83).

(83) a. The house will sell quickly. (intransitive verb phrase)

b. They will sell the house. (transitive verb phrase)

c. They will sell someone the house. (ditransitive verb phrase)

d. The house will be a quick sell. (noun phrase)

Under a realizational approach, it need not be that there are as many morphological exponents ("vocabulary items", in Distributed Morphology) as there are (categorically) different contexts in which /sɛl/ can occur. Instead, there need be only one vocabulary item that associates this phonological form to all of the contexts in (83).

In this sort of system, morphosyntactic derivations determine which vocabulary item is deployed (via a mechanism that allows a many-to-one mapping between morphosyntactic features and an exponent). This is unlike a system where the lexicon drives syntax, which would require one to make a choice between employing an intransitive, transitive, or ditransitive *sell*, at a point preceding syntactic structure building.

To be clear, in realizational models, the different usages of *sell* can arise with a single vocabulary item (i.e., the shared morpho-phonological form or set of forms). Different amounts/types of surrounding functional structure then give rise to the various different meanings and distributions (e.g., as a ditransitive verb, as a noun, etc.) of *sell*. This common core to all instances of *sell* crucially includes a lexical root, often written √SELL (but could also be written as, e.g., $\sqrt{}_{382}$ which more directly conveys that lexical roots can be taken as pointers to stored information whose forms are essentially arbitrary; Acquaviva 2009:p.19). The semantic role of the lexical root of a predicate like √SELL is to name the relevant sort of event/state (see especially Borer 2005a).[32] Moreover, in certain approaches, this is the only thing the √SELL does; it does not specify, e.g., the number of arguments it must occur with.[33]

A benefit of this system that is relevant to the problem of out-PRED has to do with the allomorphs of the *sell* verbs (83a–c): note that all verbal usages of *sell* appear as *sold* in past, perfect, and passive contexts. If these different argument structures / morphosyntactic features were tied to separate lexemes (e.g., three homophonous *sell* verbs), it might have to be viewed as a sort of accident that they all share the same past, perfect, and passive form. Instead, with a realizational model, there could be a singular rule of allomorphy that chooses the /sold/ allomorph for the same lexical root √SELL, in all the different argument/structures in which it occurs.

4.2 Structural Analysis

Having established these components of the framework of morphosyntax followed here, we can return to a structural analysis of out-PRED. Recall that, in out-PRED contexts, the arguments that surface are those of *out-* (cf. (82)), and the internal arguments that can otherwise occur with PRED are "suppressed" (i.e., not syntactically introduced). This apparent "transformation" of argument structure is the essential effect of *out-* prefixation. However, because PRED is active in the syntactic derivation (cf. (20)), the fact that PRED's internal arguments do not merge cannot reduce to PRED not merging.

[32] Not all predicates contain lexical roots (e.g., all uses of English *have*; Myler 2016).

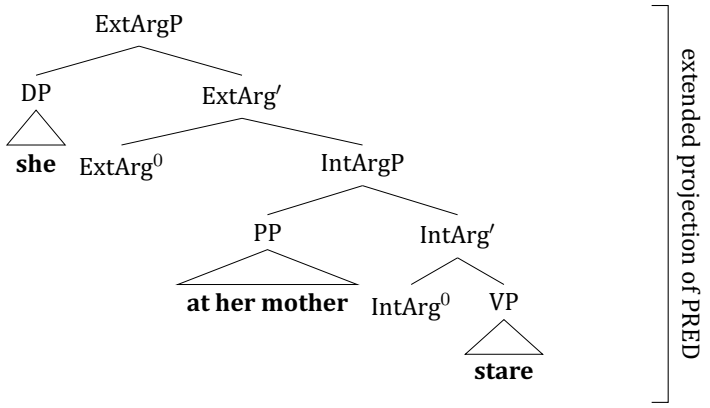
[33] For extensive discussion of whether a root selects any arguments, see Harley 2014a and the response papers in volume 40(3/4) of *Theoretical Linguistics*.

Moreover, because of No Tampering, it cannot be that a later merging of *out-* destroys a previously-merged argument introduced by PRED. Instead, the solution proposed here is similar to how √SELL occurs in many different argument structure frames in (83): there is a structural core that corresponds to PRED, and that core does not determine argument structure of the out-PRED clause. In this way, the internal argument "suppression" is the result of *out-* merging with a structural core of PRED that excludes the internal argument. This in turn requires an analysis where there is a stretch of structure for a PRED that lacks an internal argument; it is severed from the PRED's XP in the same way as external arguments.[34]

To demonstrate this idea with radical severance of all of a PRED's arguments, let us first consider a non-out-PRED clause, as a baseline. Consider a sentence like (84a), in which the PRED *stare* has one internal argument, *at her mother*. The syntax of the argument structure is as in (84b), in which both the external argument and the internal argument are severed from the PRED *stare* such that they are outside the VP that corresponds to just *stare*.[35]

(84) a. She stared at her mother

b.



Each argument is introduced in a separate layer of the verb's extended projection.[36] Neither the subject or object is introduced in the VP; they are introduced in functional projections, and the VP instead serves as the structural core of the extended projection, with the root √STARE serving to name the type of event. This syntax corresponds transparently to a neo-Davidsonian semantic representation of the argument structure (as described in Parsons 1990, Schein 1993, *et seqq*.),

[34] Note that Kratzer 1996, which argues for severing the external argument from the lexical predicate, argues for not doing so with the internal argument. See §3.3 of Lohndal 2012 for rebuttals to Kratzer's arguments.

[35] A question raised by a reviewer concerns the semantics of IntArg and ExtArg. If one pursues a fully neo-Davidsonian syntax/semantics, then the semantic variables that are arguments of the predicate at LF are introduced in each of these positions. It could be that different predicates co-occur with different semantic/thematic functions in each of these positions, to yield the appropriate interpretation. (In this case, encyclopedic knowledge of PRED means knowing which functional LF functions apply in each of these positions.) Under this view, the structure, [$_{VP}$ *stare*], only names staring events and doesn't have any semantic argument structure.

Alternatively, the IntArgP and ExtArgP simply house the syntactic arguments, and (some of) the semantic variables are introduced by the PRED. In this case, the structure [$_{VP}$ *stare*] houses some of the semantic argument structure, but the relevant variable is not bound within the VP, rather it is bound by the syntactic argument(s) higher in the structure.

This question is outside of the scope of this paper on the syntactic structure of out-PRED, and we will not adjudicate between these semantic alternatives.

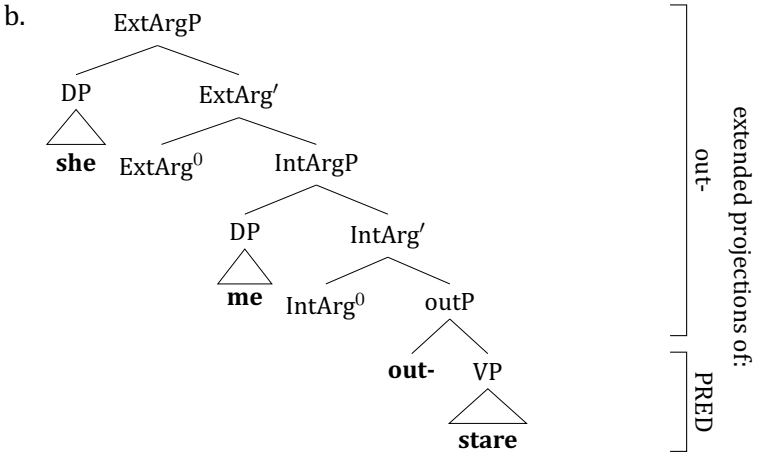
[36] The label of "VP" is intended as a shorthand, concealing a more fine grained structure, including at least the root √STARE and a verbalizer. Additionally, the "IntArgP" and "ExtArgP" names are inconsequential for this analysis; what matters is that the positions in which arguments are syntactically licensed are found outside of the XP that includes the PRED. See also fn.4.

such as the one in (85).

(85) λe. ⟦stare⟧(e) & AGENT(⟦she⟧,e) & THEME(⟦at her mother⟧,e)

A syntax like (84) that has this property of mapping transparently onto the semantics has been argued for in other works as well (e.g., Borer 2005b and Lohndal 2012, as well as some of the works mentioned in §4.1), and out-PRED provides new evidence for this: namely that PRED is syntactically present without its internal argument. Following this line of reasoning, the derivation of the argument structure of out-PRED sentence in (86a), is provided in (86b).

(86) a. She **out-stared** me

b. 

This syntactic analysis is consistent with a what Kotowski 2020 calls the scalar-comparative interpretation of out-PRED (contrasting with a resultative interpretation).[37] As mentioned, this differs from previous sketches of the syntax of out-PRED (from both comparative and resultative approaches; cf. §3.2), in that *out-* is what introduces both arguments of PRED and is what controls the extended projection of the out-PRED clause (in accordance with our earlier out-PRED generalizations, namely (82)); PRED is too small to project such structure. As such, *out-* merges with a syntactically small PRED (here shown to be VP) that is big enough to support information about the predicate's eventuality, but small enough that it lacks an extended projection to support any arguments.[38] (This analysis can also explain why *stare* has a prepositional object and *out-stare* has a nominal one; *out-* always selects a nominal internal argument.)

In addition to facts about the argument structure, the analysis shown in (86) explains earlier generalizations we saw, with respect to properties that are high in the extended verbal projection, like passivizability and availability of high adjuncts. The extended projection contains the relevant syntactic material for passivization and high adjunction, and all cases of out-PRED have the same external projection (because of *out-*). This is why all out-PREDs are passivizable and can all have the same sorts of high adjuncts.

4.3 Internal Argument "Suppression"

The apparent "suppression" of a PRED's arguments in out-PRED contexts is the result of *out-* merging with a structure that is too small to support any of PRED's arguments. There is no deletion of

[37] Recall that we are modelling only out-PREDs with a comparative interpretation, and not those that appear to yield a resultative interpretation. See footnote 16.

[38] In this way, *out-* merges on the spine above the verb, and forms a prosodic word with the verb. This is unlike Germanic prepositional verb-particles, but is similar to verb-particle constructions in Greek (Artemis Alexiadou, p.c.).

already-merged syntactic arguments to achieve this "suppression". (This is similar to the case of middles lacking syntactic external arguments [cf. Ackema & Schoorlemmer 2006], not by suppression, but by lack of sufficient functional structure.) In this way, the syntactic introduction of an internal argument is high enough in the structure that it is controlled by *out-* and not by PRED.

Consequently, for all PREDs that can occur in out-PRED frames, it must be that an internal argument that can normally occur with a bare PRED must be introduced higher than the PRED VP.[39] If instead an internal argument of a PRED were merged within the same XP as that PRED (e.g., VP), it would be impossible to predict that otherwise robustly transitive PREDs (like those in (87)) can occur in out-PRED without their internal argument – as shown in (88).

(87) *Weigh* and *produce* with their obligatory objects

a. Fido weighs *(20kg).

b. Speaking of red wine, France usually produces *(it).

(88) *Weigh* and *produce* without their objects in out-PRED

a. Fido **outweighs** (*20kg) Rex (*20kg).

b. Speaking of red wine, France usually **out-produces** (*it) Italy (*it).

Because *out-* merges with the PRED VP, if VPs included the typical nominal object of predicates like *produce* or *weigh*, we could not predict that the typical objects are obligatorily absent in out-PRED.[40] In other words, this means that the objects in (87) are not obligatory due to an inherent property of the verbs *weigh* or *produce*. The obligatoriness of an internal argument for predicates like these must be rooted in some other way, such that it need not be enforced in out-PRED structures. We will return to this issue in §6.1.

5 Blocking out-PRED

An important aim of any analysis is that it must do more than offer an explanation of just what is possible, but what is impossible too. In this section, we will look more closely at three different contexts in which out-PRED is blocked.

(89) Idioms consisting of verbs and an internal argument

a. We shot the breeze.

b. #We outshot them. (# = no idiomatic reading)

(90) The verb *have*

a. We have cars.

b. *We outhave them.

(91) Change-of-State unaccusatives

a. The mugs dried.

b. *The mugs outdried the glassware.

[39] It may be that what some PREDs lexicalize/expone includes the structure that introduces the internal argument; if any such PREDs exist, they are predicted to not serve as a base for a well-formed out-PRED. See §6.1.1.

[40] It is not obvious what other approaches to out-PRED would predict for examples like (88); it would seem that they would need to 'detransitivize' the predicate first. As said in fn. 28, this paper models exactly what it means to 'detransitivize' PRED: as a case of failing to merge the argument-introducing heads outside of VP.

This is a heterogeneous class, syntactically. However, what all of these cases have in common is that the PRED and an argument must occur in the same interpretive domain, while the out-PRED structure described in §4.2 prevents this from being possible.

5.1 Idioms

This section will demonstrate a difference in availability of idiomatic interpretation in out-PRED, depending on the structural size of the idiom. Before getting to this data and analyzing where out-PRED is blocked, we will briefly review some of the core aspects of idioms and how they have been analyzed.

5.1.1 Idiomatic Interpretation

To begin, we will consider five idioms that include a verb, four of which also include an argument of the verb. In (92a-c), the verb and an argument form the idiom together, and idiomatic interpretation depends on the presence of both the predicate and the internal argument. In (92d), the idiosyncratic interpretation of the predicate does not depend on an internal argument, but it does depend on an external argument.[41] Finally, in (92e), the idiom consists of a transitive verb, *nickel-and-dime* (which is made up of multiple lexemes), but no argument is specified in the idiom.

(92) a. Julie cooked the books.
≈ Julie falsified financial records

b. Eddie passed the hat around his neighborhood.
≈ Eddie solicited contributions around his neighborhood

c. We shot the breeze with them.
≈ We had a casual conversation with them.

d. The acting bug bit me.
≈ I became very enthusiastic about acting.

e. Ryanair always nickel-and-dimes you.
≈ Ryanair always charges you with many small fees that end up being significant

A definitional property of idioms is that the idiomatic interpretation requires that all components of the idiom must be present. (This is in fact a core aspect of how to identify which components of an utterance form the idiom, and which are ancillary; see Bruening 2020 for deeper discussion.) As a demonstration of the fact that *books* is a core chunk of the idiom, compare (92a) with *Julie cooked the ledgers*, which lacks an idiomatic reading entirely, despite the near synonymy of *the books* and *the ledgers* in similar (non-idiomatic) contexts. Similarly, idiosyncratic interpretation of *nickel-and-dime* depends on precisely these component parts: *nickel-and-penny* or *nickel-or-dime* do not have idiosyncratic interpretations, nor are they conventionalized as a verbs.

It is not the case that idioms are fixed in the word order of their components; idiom chunks can move around via syntactic operations such as topicalization, relativization, and subject-to-subject raising. As such, idioms must be syntactically complex, with constituents that can be manipulated by syntax (e.g., O'Grady 1998, *et seqq*.). Moreover, some idioms even allow for passivization to rear-

[41] The idiom *the (...) bug bite ...* most typically occurs with an object of *bite* and a modifier of *bug*, though it can also occur without either: '*Runners are the first to admit they're the worst junkies – once the bug has bitten, there's no turning back*'. This example also shows that the experiencer object of *bite* is not a required piece of the idiom.

range the idiom chunks (see Fraser 1970 and Richards 2001 among many others), as demonstrated in (93).

(93) a. The books have been cooked. (idiomaticity OK)

b. The hat has been passed. (idiomaticity OK)

c. # The breeze has been shot.

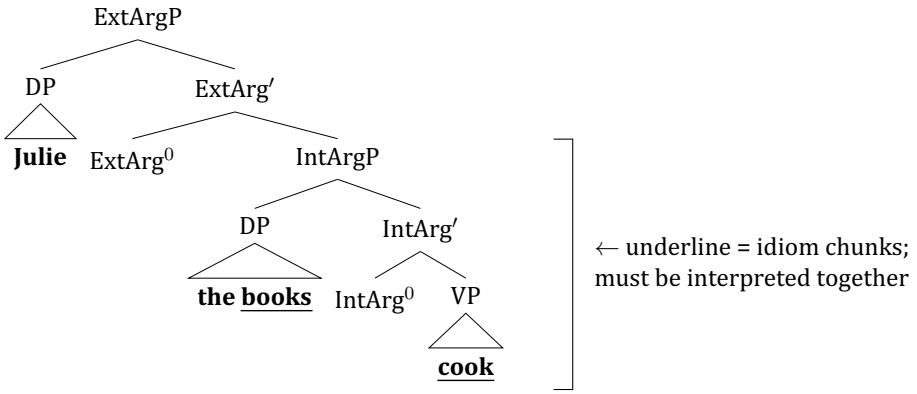
d. I was bitten by the acting bug. (idiomaticity OK)

e. You always get nickel-and-dimed by Ryanair. (idiomaticity OK)

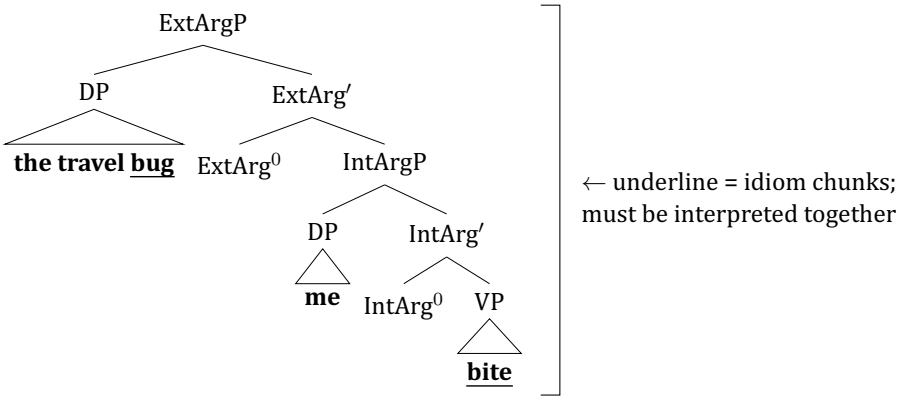
(Note: not all idioms are passivizable; cf. (93c). See, for example, Nunberg et al. 1994, Ruwet 1991, and Schildmier Stone 2016 for discussion.) Since movement operations can apply while preserving the idiosyncratic interpretations, the computation of whether an idiomatic interpretation is available need not occur on the surface structure. Instead, the constraint is that all chunks must be in the same domain of interpretation, and this must hold at some stage of the derivation that is earlier in structure building (e.g., Borer 2013, Harley 2014b, Kratzer 1996, and Marantz 1984, 2013).[42]

For this reason, the relevant interpretive domain of the idiom *cook the books* must include, minimally, the VP and the IntArgP for (92a-b) – this is exemplified in (94a). For idioms like (92d) that specify an external argument, the relevant interpretive domain must minimally include the ExtArgP – this is exemplified in (94b).

(94) a.



b.



[42] Bruening 2017 identifies apparent counterexamples to this generalization, with biclausal idioms such as [*X bite the hand* [*that feeds X*]]. See footnote 43 for further discussion.

5.1.2 Idioms and out-PREDs

With this understanding of idioms, we can turn now to how idioms interact with out-PRED. Given that the PRED of out-PRED never projects arguments (cf. §4.2), we might predict that an idiom composed of a verb and an object should be unacceptable in out-PRED contexts: the verb doesn't have an object. This prediction is borne out in (95a–c), where the idioms rely on both a verb and an object.

(95) a. Julie **out-cooked** the other accountants.
≠ Julie falsified financial records better than other accountants.

b. Eddie **out-passed** other volunteers.
≠ Eddie solicited contributions better than other volunteers.

c. We **out-shot** him.
≠ We had better casual conversation than him.

d. The travel bug **out-bit** the acting bug.
≠ Enthusiasm for traveling was stronger than enthusiasm for acting.

e. Ryanair always **out-nickel-and-dimes** EasyJet.
≈ Ryanair always charges many small fees that end up being significant more than EasyJet.

Since idiomatic meaning rely on all components of the idiom being present, and since the object idiom chunks are missing in out-PREDs, (95a–c) are straightforwardly understood to lack idiomatic meaning. For example, (95a) lacks idiomatic meaning of *cook the books* because the argument, *the books*, is not present in the syntax. Conversely, the idiomatic meaning of *nickel-and-dime* remains in out-PRED in (95e) – all components of the idiom (the morphologically complex verb) surface in out-PRED.

In addition, it isn't simply that idiomatic interpretation depends on presence of all the idioms chunks somewhere in the sentence. If this were all that were required, we would incorrectly predict that (95d) should be grammatical. (Its idiomatic interpretation depends on the verb (*bite*) and a chunk in the subject (*bug*), and both do surface in the out-PRED clauses.) It may therefore be puzzling that out-PRED does not allow an idiomatic interpretation. Similar findings repeat for another idiom with chunks in both the verb and subject, given in (96a), where the idiomatic interpretation is lost in out-PRED, as in (96b).

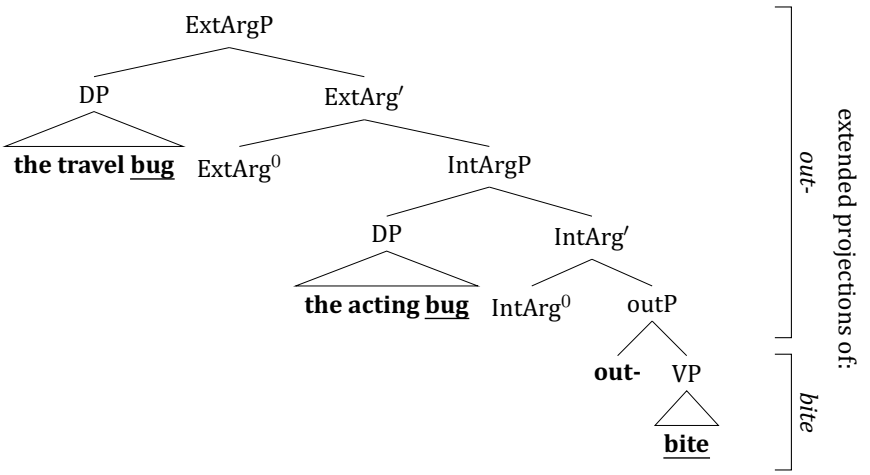
(96) a. Wait until the fat lady sings.
≈ Wait until it ends.

b. Wait until the fat lady **out-sings** someone else / another fat lady.
≠ Wait until it ends (faster than something else).

This is an indication that the analysis for what it is about out-PRED that blocks these idiomatic interpretations must go deeper. As discussed in §5.1.1, idiomatic interpretations not only require co-presence of the chunks in the syntax, but also that the chunks occur within a particular syntactic domain. To consider the role of syntactic domain, we will use as a case study the example in (95d), repeated as (97a), alongside its out-PRED derivation in (97b).

(97) a. # The travel bug out-bit the acting bug. (# = no idiomatic reading)

b.



In §5.1.1, no discussion of the maximal size of the domain of idiosyncratic interpretation was given. Intuitively, the issue is that *bug* and *bite* are in different extended projections in (97). Thus we should look for evidence that the domain of idiosyncratic interpretation is related to the notion of an extended projection. In fact, Borer (2013:238), looking at the availability of idiosyncratic interpretation for different nominalizations, argues for just this: "[…]the syntactic domain of non-compositionality is restricted by functional structure, where by 'functional structure' I refer here to the reservoir of nodes which are (non-lexical) segments of extended projections[…]".

Following this, idiomatic interpretations of PRED/argument combinations require the PRED and the relevant arguments to be in the same extended projection.[43] Since the subject and object in an out-PRED clause are not in the extended projection of PRED (see (20)), the syntax of out-PRED makes meeting this requirement impossible. The only out-PREDs that are compatible with the idiomatic interpretation of a PRED are those in which PRED's idiomatic interpretation does not rely on an argument – as attested by the contrast we saw between (92e) on the one hand, and (92a–d) and (96) on the other.

This analysis can be formulated as a statement in more general terms, which constrain out-PRED with respect to all types of idiosyncratic interpretations. This statement is given in (98):

(98) **Constraint of Interpretive Domains**
If proper interpretation of a predicate/argument requires the two to be interpreted together in the same domain, out-PRED is blocked.

We will see the benefit of having this general statement when we turn to the verb *have* and change-of-state unaccusatives, in the coming sections.

Before moving on, a crucial point of the analysis of (92d) ought to be emphasized: if *bug* were indeed the subject of *bite* in the context of *out-bite* (as in comparative deletion and resultative approaches; cf. §3.2), nothing would block an idiomatic interpretation of (95d) or (96b). For example,

[43] Bruening 2010, 2017 offers a less restricted constraint on idiomatic interpretation, which is not constrained by syntactic locality. This analysis would also be able to rule out out-PRED with idioms, granting that the subject/object of out-PRED are arguments of *out-* and not of PRED (as argued throughout this paper). Though an analysis like Bruening's would be consistent with this general finding, that analysis of idioms would lose the proposed analytical connection between idioms, on the one hand, and *have* and CoS unaccusatives, on the other (a connection argued for in the remainder of this section). However, if Bruening's analysis is ultimately right (i.e., there are no syntactic locality restrictions on idioms), the idiom data in this section would still support the general conclusion that arguments of out-PRED are arguments of *out-* and not of PRED.

an approach like Marantz 2009 incorrectly predicts that idiomatic interpretation is available for (96b), because the subject and the object to be local enough to PRED to yield idiomatic interpretations.[44] That is, this data with idioms consisting of subjects and verbs provides additional support for our previous analysis that the subject of out-PRED is not first merged as the subject of PRED.

5.2 *Have*

Consider now the verbs *have* and *own*, which can be used as verbs of possession/ownership. Notably, even controlling for context, *have* and *own* differ in their ability to occur in out-PRED constructions.

(99) a. Morgan has more game consoles than Shannon. [Relational (Ownership) *have*]

b. *In terms of game consoles, Morgan **out-has** Shannon.

(100) a. Morgan owns more game consoles than Shannon.

b. In terms of game consoles, Morgan **out-owns** Shannon.

A possible first hypothesis for the contrast in (99b) to (100b) could be that this is a quirk of the possessive usage of *have*, and that this is not informative for a working theory of out-PRED. However, out-PRED is regularly unavailable with all usages of *have* that have been explored. Consider the range of usages given in the (a) examples of (101)–(106), each of which come from chapter 4 of Myler 2016. In all cases, the *out-have* counterparts in the (b) examples are unacceptable.

(101) a. I have a sister. [Relational (Kinship) *have*]

b. *In terms of sisters, I **out-have** you.

(102) a. The stadium has two pubs flanking it. [Locational *have*]

b. *In terms of nearby pubs, the stadium **out-has** the library.

(103) a. John had something wonderful happen (to him) today. [Experiencer *have*]

b. *In terms of wonderful experiences, John **out-had** Bill.

(104) a. I'm having my butler shave the cow. [Engineer *have*]

b. *In terms of butlers shaving one's cows, I'm **out-having** you.

(105) a. The wind had our belongings strewn across the field. [Causer *have*]

b. *In terms of belongings strewn across the field, the wind **out-had** the earthquake.

(106) a. We had a conversation. [Light Verb *have*]

b. *In terms of conversation, we **out-had** them.

Myler argues that, in all these usages, *have* itself does not contribute to the interpretation; "[b]ecause *have* itself is semantically vacuous, all of the thematic content of such sentences comes from *have*'s [internal argument]" (*ibid*.:p.277). Thus proper interpretation of *have* clauses depends on *have* and its internal argument, but in all *out-have* cases, no such internal argument is merged local to *have*. Consider the structure for *out-has* in (107b), and the annotation of the boxed extended projection of *have*.

[44] The object that is in the result state under Marantz's approach to *re-* and *out-* must be in the same interpretive domains as the verb, because a *re-* prefixed verb allows idiomatic readings, as show by data like ✓'*the music bug re-bit me*' (attested at `https://bit.ly/34z7QZc`) and ✓'*re-cook the books*' (attested at `https://bit.ly/3i7wPur`).

(107) a. *In terms of game consoles, Morgan **out-has** Shannon.

b. *[$_{\text{ExtArgP}}$ **Morgan** [$_{\text{IntArgP}}$ **Shannon** [$_{\text{outP}}$ **out-** $\boxed{\text{[}_{\text{VP}}\ \text{[}_{\text{ResultP}}\ \textbf{have}\ \text{]]}}$]]]
extended projection of *have*

This structure leads to a violation of the Constraint of Interpretive Domains in (98). Thus in some senses, *have* in all examples above is like the *cook* in *cook the books*: its interpretation depends on being in the same interpretive domain (i.e., extended projection) as its argument. Unlike idiom cases, however, *have* has no interpretation in the absence of its internal argument. (Compare this with *cook*, which has an interpretation when it has no local internal argument, albeit not an idiomatic one.) As such, the structure for out-PRED in §4.2 alongside the constraint in (98) can predict the unacceptability of *out-have* in all cases, because *have* has no internal arguments in its extended projection.[45]

5.3 Change-of-State Unaccusative Verbs

We have now seen two domains in which out-PRED is blocked, supporting the analysis that, in out-PRED, PRED merges without any arguments in its extended projection. These contexts were blocked as the violated a Constraint of Interpretive Domains, described in (98). We turn now to a third case that supports this analytical approach: unaccusative interpretations of Change-of-State (CoS) predicates.

5.3.1 Unaccusatives and CoS Unaccusatives

CoS predicates (such as *dry*, *whiten*, and *clean*) are ones that indicate that an internal argument is in a particular state, as the result of the event, with the result state named by the predicate itself. In the examples below (and in all CoS examples), the relevant internal argument that is in the result state is underlined. For example, in (108a), *the floor* is in a clean state, as a result of the event; likewise, for *incisors* and *silverware* and their respective result states in (108b–c).

(108) a. Hardwood floors clean easier than tile floors, in Pine-Sol's product-test.

b. With this teeth whitening method, incisors whitened more than molars.

c. The glassware dried faster than the silverware, in the dish-drying competition.

The contexts of these comparative clauses in (108) seem provide similar sorts of meaning as out-PRED clauses. However, out-PRED is unacceptable even in the same contexts; this is demonstrated in (109).[46]

(109) a. *Hardwood floors **out-clean** tile floors, in Pine-Sol's product-test.

b. *With this teeth whitening method, incisors **out-whitened** molars.

c. *The glassware **out-dried** the silverware, in the dish-drying competition.

[45] As an anonymous reviewer points out, in the very same way, we correctly predict that *out-be* should never converge, since the meaning of *be* is fully dependent on its internal argument.

[46] Certain verbs that can be used as CoS unaccusatives have been reported to be acceptable with *out-*; in particular, *out-grow* and *out-bloom* (Adamson 2015). However, these appear to be exceptional, and few forms have been found to behave this way. Perhaps it is that they are construed as unergatives (a similar idea is proposed by Adamson), or perhaps it is that these are internally caused CoS predicates, which have different argument structure properties (see Ramchand 2008). (Recall, however, that unaccusatives do not need an internal-causation interpretation to occur in out-PRED; cf. fn.25.)

Since these examples are intended to mean the same as the grammatical examples in (108), the unacceptability of these examples must relate to the derivation of out-PREDs. Moreover, the unacceptability of (109) is not a function of unaccusativity; we have seen several examples of out-PREDs where the arguments of the PRED are internal arguments. Compare (109) with (46)–(50); (50) is repeated below.

(50) a. The signs hung for a long time.

b. The signs with name-brand tape **out-hung** those with store-bought tape.

While these examples in (46)–(50) and (108)–(109) all have arguments construed as internal arguments of PRED, what is different about the unacceptable unaccusative usages in (108)–(109) is that they involve CoS unaccusatives. What rules out (a subset of) unaccusatives with *out-* must not be unaccusativity itself, but rather the properties of CoS derivations, raising the question of what these properties are.

A notable derivational property of CoS unaccusatives is that they have been syntactically analyzed as having their internal argument introduced outside of the XP that contains the PRED (e.g., Hale & Keyser 1993, Cuervo 2003, Dobler 2008, and Alexiadou & Schäfer 2011). This is sketched out in (110), with the predicate √DRY, as in *The glassware dried*.

(110) $[_{\text{IntArgP}}$ **the glassware** $[_{\text{ResultP}}$ **√DRY**]]

In CoS unaccusatives' syntax, there is a constituent that maps onto the PRED without its internal argument ('ResultP' in (110)); so it may be surprising that CoS PREDs are ill-formed in the out-PRED context. Thus it is not an issue of constituency that blocks *out-* from merging with a PRED that lacks an internal argument; we must look for a deeper derivational cause. We turn now to some data where *out-* can merge with a CoS PRED.

5.3.2 CoS Alternations

Famously, many CoS predicates exhibit an alternation such that they can occur in both unaccusative contexts (above) and transitive ones, as in (111).

(111) a. Pine Sol cleans floors better than Mop-n-Glo, in a product-test.

b. Comparing teeth whitening methods, dentist treatments whitened teeth more than home kits.

c. Louis dried silverware better than Barry, in the dish-drying competition.

Structurally, this has been analyzed as an extra functional layer (here labelled "ExtArgP"; cf. Alexiadou et al. 2015's VoiceP) that introduces the causer/agent of the change.

(112) $[_{\text{ExtArgP}}$ **Louis** $[_{\text{IntArgP}}$ **silverware** $[_{\text{VP}}$ $[_{\text{ResultP}}$ **√DRY**]]]]

Given that we have seen that the unaccusative usage is impossible with out-PRED, and given that the causative usage builds upon the unaccusative structure, we might expect that out-PRED is impossible with these causative usages as well. It is notable then, that out-PRED is indeed possible in this context:[47]

[47] This is despite the fact that CoS causatives otherwise typically "resist object deletion" (Rappaport Hovav 2008:23). We have already seen other verbs that resist object deletion hat can occur in out-PRED, e.g., *produce* or *weigh*. See §3.3.

(113) a. Pine Sol **out-cleans** Mop-n-Glo, in a product-test.

b. Comparing teeth whitening methods, dentist treatments **out-whitened** home kits.

c. Louis **out-dried** Barry, in a dish-drying competition.

In (113), the very same CoS PREDs that were unacceptable in out-PRED clauses in (109) are acceptable when the arguments of *out-* are construed as external arguments of the CoS PRED. This shows that CoS PREDs can occur as the complement of *out-* without any of their own arguments. As such, the unacceptability of out-PREDs formed with unaccusative CoS PREDs in (109) does not reduce to CoS predicates needing to surface with an internal argument. Whatever blocks out-PRED with CoS unaccusatives does not arise for all CoS PREDs, but only ones where the CoS PRED is construed as unaccusative.

5.3.3 Deriving (Un)Availability of out-PRED with CoS Predicates

In causative and unaccusative usages of CoS predicates, the internal arguments are merged in the same syntactic position. However, internal arguments of CoS predicates are different from external arguments of CoS predicates in that internal arguments must be interpreted as being in a final state that is specified by the lexical predicate (e.g., Ramchand 2008, Rappaport Hovav 2008). Given this, and given interpretive constraint discussed for idioms and *have*, repeated below, the analysis proposed here is that, when there is a CoS argument, it must be interpreted together with the predicate that names the final state. (Recall (98).) The logic of this analysis is that, whenever an argument gets interpreted as being in the result state named by a CoS predicate, the predicate and the argument must be in the same extended projection.

This analysis will straightforwardly account for the contrast between the patterns we have seen. The relevant contrasts are represented in the data in (114).

(114) a. Pine Sol cleans hardwood floors better than Mop-n-Glo. [CoS Causative]

b. Hardwood floors clean better than tile floors. [CoS Unaccusative]

c. Pine Sol **out-cleans** Mop-n-Glo. [CoS Causative; out-PRED]

d. *Hardwood floors **out-clean** tile floors. [CoS Unaccusative; out-PRED]

The derivations for the argument structures of (114) are given below, with the extended projection that contains the CoS predicate in a box, and the arguments intended to be interpreted in the result state underlined. (Not all examples have an argument to be interpreted in a result state.)

(115) a. $\boxed{[_{\text{ExtArgP}}\ \textbf{Pine Sol}\ [_{\text{IntArgP}}\ \underline{\textbf{hardwood floors}}\ [_{\text{VP}}\ [_{\text{ResultP}}\ \sqrt{\textbf{CLEAN}}\ ]]]]}$
extended projection of *clean*

b. $\boxed{[_{\text{IntArgP}}\ \underline{\textbf{tile floors}}\ [_{\text{VP}}\ [_{\text{ResultP}}\ \sqrt{\textbf{CLEAN}}\ ]]]}$
extended projection of *clean*

c. $[_{\text{ExtArgP}}\ \textbf{Pine Sol}\ [_{\text{IntArgP}}\ \textbf{Mop-n-Glo}\ [_{\text{outP}}\ \textbf{out-}\ \boxed{[_{\text{VP}}\ [_{\text{ResultP}}\ \sqrt{\textbf{CLEAN}}\ ]]}\ ]]]$
extended projection of *clean*

d. *$[_{\text{ExtArgP}}\ \underline{\textbf{hardwood floors}}\ [_{\text{IntArgP}}\ \underline{\textbf{tile floors}}\ [_{\text{outP}}\ \textbf{out-}\ \boxed{[_{\text{VP}}\ [_{\text{ResultP}}\ \sqrt{\textbf{CLEAN}}\ ]]}\ ]]]$
extended projection of *clean*

For the causative and unaccusative clauses in (114a–b), the internal argument of the CoS predicate is in the same extended projection as √CLEAN – in fact, in both cases, the internal arguments are in the same syntactic position. On the other hand, in (114c), there is no argument construed as the internal argument of CoS *clean*; as such, there is no argument that is intended to be interpreted in

the same domain as √CLEAN, and the derivation is able to converge. Finally, in (114d), there are arguments construed as the internal argument of CoS *clean*, but they are in the extended projection of *out-*; as such, they cannot be interpreted in the same domain as √CLEAN, and the result is that the derivation cannot converge with the intended meaning.

In other words, only in (114d), is there an argument that is intended to be interpreted in a particular extended projection, but that occurs outside of it. This leads to a derivation that does not converge, as it violates (98). This analysis unifies CoS unaccusative usages with predicate idioms and *have*, and provide further support for the structural analysis of out-PRED in which all arguments of the clause are merged in the extended projection of *out-* (and not in the extended projection of PRED).

6 Conclusions

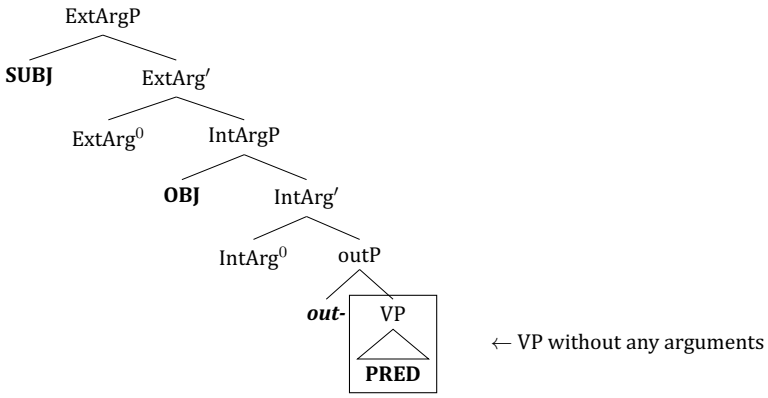
Before briefly discussing the general conclusions of this work, we will first look at some areas where this work may have broader impact and where further work is necessary.

6.1 Broader Impact and Further Research

6.1.1 Severing the Internal Argument

As mentioned in the introduction, on the surface out-PRED appears to be an instance of morphosyntactically-controlled argument suppression: adding *out-* to a PRED appears to remove PRED's object(s). However, the data support an alternate analysis: it is not argument suppression, *per se*, but is that PRED merges without the functional structure that introduces arguments. This is schematized in (116).

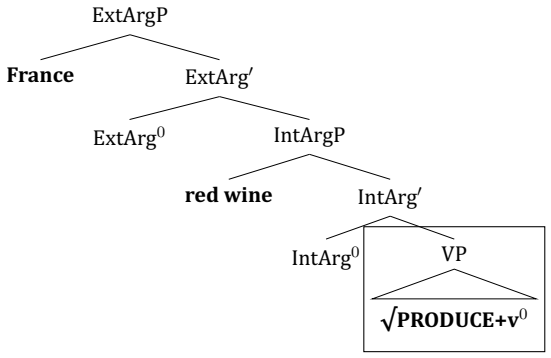
(116) General analysis of out-PRED:



In other words, in out-PRED, the PRED's structure is too small to support an internal argument (or any argument, for that matter).

Taking this more broadly, this means that objects are regularly able to be severed from the lexical predicate, demanding syntactic severance in the same way as subjects. As such, for a predicate like *produce* (which can appear in out-PRED; see (64)), its structure must resemble (117), where there is a phrasal constituent (without any of *produce*'s arguments) that can merge as the sister of *out-*.

(117) The verb *produce* is severed from its internal argument:



In other words, if the smallest phrase that contained the √PRODUCE and its v^0 verbalizer also included the internal argument, *out-produce* would be impossible to derive. (The verbalizer must be included in this constituent, since the form /pɹəˈdus/ only occurs in the context of v^0, and PRED can include overt morphemes like *-ize* or *-en*; see §2.1.)

The fact that robustly transitive verbs *produce*, *hit*, *weigh*, and *spend* can appear without an object in out-PRED contexts conflicts with some existing analyses of (putative) obligatory objects. It would not be appropriate to analyze the generally robust transitivity of a predicate to the root selecting its argument (compare this with analyses like Harley 2014a), since √PRODUCE occurs in *out-produce* without an internal argument. In addition, it cannot that the √+v^0 structure that a verb like *produce* realizes is one that requires an internal argument (compare with analyses like Ramchand 2008); a root and its verbalizer are both present in the PRED structure of out-PRED, without an internal argument. Finally, it cannot be that the obligatoriness of the internal argument is simply conventionalized knowledge about a vocabulary item like *produce* (compare with analyses like Borer 2005b), since such conventionalized knowledge would need to be somehow suspended for out-PRED.[48] We will leave open the question of how to address this issue, while noting the relevance of out-PRED data in pursuing the best analysis.

Related to this argument structure puzzle of where out-PRED is possible, there is also a puzzle related to where out-PRED is impossible. We have motivated severing internal arguments in the context of predicates that allow out-PRED, but it may be possible that some unacceptable out-PREDs are unacceptable because those PREDs do select complements. For instance, for predicates like √ARRIVE, it could be that out-PRED is blocked because *arrive* lexicalizes/realizes structure that includes internal-argument-introducing structure. For example, *arrive* might only be able to realize a [√+…+$IntArg^0$] structure, or the internal argument of *arrive* might need to merge within PRED (e.g., in a VP or √P). At the same time, we saw in §5 that out-PRED can be blocked without appealing to an analysis where internal arguments are bundled with the lexical predicates. Idioms and *have* were blocked from out-PRED while maintaining an analysis with severed internal arguments. Moreover, CoS unaccusatives showed that some cases of blocked out-PRED arise just in the same contexts where internal arguments have already been argued to be severed. As such, the unacceptability of *out-arrive* need not reduce to √ARRIVE selecting an internal argument, though it may. Further research is necessary to shed light on this issue.

These issues aside, this general properties of the analysis in (117) add support to the idea that syntax may transparently map onto a fully neo-Davidsonian semantics. That is, all arguments separated from the lexical predicate – each introduced by unique semantic functions, which corre-

[48] Perhaps this latter idea is amenable to the data provided in this paper, if the conventionalized knowledge can make reference to larger syntactic contexts, such that they are suspended in the syntactic context of out-PRED.

spond with unique syntactic positions. (Borer 2005b, Lohndal 2012, and others provide further arguments in favor of this.)

6.1.2 Out-sell vs. Out-buy

We will now consider more about the role of the PRED argument structure in an out-PRED derivation. In §3.2, the semantic contribution of the PRED is deemed to be naming the relevant events/states used in a comparison – see (41), repeated below. This is why, in *out-sell*, the arguments can be construed as agents of selling, or as patients of selling.

(41) $[\![\text{out-}]\!] = \lambda P\ \lambda x\ \lambda y\ .\ y >^{c} x$, with respect to dimensions determined by context and P-named events/states

(118) a. We **out-sell** all other fruit-sellers.

b. Bananas **out-sell** plums.

The sentences in (118) show that *out-sell* is flexible in how its arguments can be interpreted with respect to selling. Our analysis captured this straightforwardly by treating √SELL as contributing only a reference point for what type of events/states are being compared. This approach found independent support from other facts that showed the argument structure and extended verbal projection of the clause is controlled by *out-*, and not √SELL.

Despite these benefits, a problem arises in that nothing in this analysis blocks (119b), where the arguments of *out-buy* are both construed as patients, as in (119b).

(119) a. We **out-buy** all other fruit-buyers.

b. *Bananas **out-buy** plums.

Because buying events are also selling events, an analysis in which √BUY simply names the events in which the entities are being compared cannot obviously distinguish *buy* and *sell*.

On the other hand, *buy* and *sell* do have different syntactic distributions: *sell* can be causative or anti-causative (✓*Bananas sold*), while *buy* can only be causative (**Bananas bought*). It may therefore be tempting to try to connect this fact into an aspect the derivation of out-PRED. One way of doing this might be to require that the arguments of out-PRED be construed as the highest argument that the PRED can otherwise project in a (non-out-PRED) argument structure. The highest argument *buy* can project is always an agent, while the highest argument *sell* can project depends on the syntactic context: sometimes it is an agent, sometimes it is a patient. However, an analysis of this type may be difficult to technically implement, given the finding that PRED's structure is too small to syntactically introduce arguments.

In the remainder of this section, we will briefly sketch out one line of reasoning that could be used in developing such an analysis. (Ultimately this line of reasoning faces some problems, but working through this maybe be useful for advancements in this domain.) First recall that PRED can be structurally complex (cf. in §2.4); it can even can contain morphemes that are linked to causation (cf. *out-strategize* or *out-whiten*). Harley (2013) argues that causative verbal structure may introduce an argument semantically, with the causer/agent nominal not syntactically introduced until a higher structural position. Following this, we could imagine that PRED may come with the morphosyntactic structure that semantically introduces arguments (e.g., structure projected by *-ize*), while also not having enough structure to syntactically introduce the nominal arguments. Thus the structure of *dentists whitened the teeth* would be like that of (120), and *dentists out-whitened home kits* would be as (121):

(120) [$_{\text{ExtArgP}}$ **dentists** [$_{\text{IntArgP}}$ **the teeth** [$_{\text{vP}}$ *λx.CAUSER(e,x)* **-en** [$_{\text{ResultP}}$ **√WHITE**]]]]

(121) [$_{\text{ExtArgP}}$ **dentists** [$_{\text{IntArgP}}$ **home kits** [$_{\text{outP}}$ **out-** [$_{\text{vP}}$ *λx.CAUSER(e,x)* **-en** [$_{\text{ResultP}}$ **√WHITE**]]]]]

If the v^0 in the out-PRED of (121) can introduce the semantic argument, it may be possible to take advantage of PRED's (partial) semantic argument structure to account for the *out-buy*/*out-sell* difference.

One possibility is that something in the derivation requires that the arguments of *out-* are interpreted as the argument that is semantically introduced at the highest point of the PRED structure (i.e., the highest semantic argument in the complement of *out-*). Because PRED can contain causative structure, the highest argument can be a causer/agent (as in both *buy* and *sell*). On the other hand, PRED can also be an anticausative structure, in which the highest argument would be a theme/patient. This would be why *out-sell* is ambiguous: *sell* can map onto a causative or anticausative PRED. Depending on which *sell* structure is sister of *out-*, the interpretation would either be one where the arguments are both agents/causers (causative) or one where they are patients (anticausative). Critically, this sort of approach would allow us to explain why *out-buy* cannot have an interpretation where the arguments are patients: *buy* cannot map onto an anticausative structure. As such, the highest semantic argument of *buy* would never be a patient, and (119b) would be predicted to be unacceptable.

Problematic for this analysis, however, is the fact that both arguments of *out-* need not to be construed as arguments of PRED. Recall data from §3.2 in which the PRED does not occur with clausal arguments, but which is acceptable in out-PRED; two examples are repeated in (122).

(122) a. Atlanta also **out-rained** Seattle in 1922 and 1923. (https://wxch.nl/2F48mls)

b. You **out-muscle** us.

Since *rain* is generally thought to lack arguments, it might seem that examples like (122) should be predicted to be unacceptable in the same way as (119b). (In all cases, the arguments of *out-* do not map onto the highest semantic argument in the PRED structure.) Because of this confound, this alternate analysis based on the highest argument of PRED does not seem more desirable – at least not as described in this section. A more refined approach must be crafted, to handle with the contrasts between (118) and (119), as well as the contrasts in between (119b) and (122).

6.1.3 Unexpected Passive Patterns

A third area of further research that we will discuss has to do with some complex facts related to passivization. Recall that passivization occurs outside of the PRED constituent, such that the argument "inversion" in passive-marked out-PREDs is inversion of the *out-* subject/object and not inversion of the PRED's subject/object. This was schematized in (75), as [PASSIVE [*out-* [PRED]]]. This is used to explain why the active and passive out-PREDs in (123a–b) are interpreted in the same way. The external and internal arguments of out-PRED compose with *out-* in the same way, because the passive inversion happens after this semantic composition.

(123) Expected pattern, broadly supported:

a. *Y is out-PREDed by X* [Passive]
≈ X PREDs $>^c$ Y PREDs
≠ X is PREDed $>^c$ Y is PREDed
≠ Y is PREDed $>^c$ X is PREDed

b. *X out-PREDs Y* [Active]

$\approx$ *X PREDs* $>^c$ *Y PREDs*
$\neq$ *X is PREDed* $>^c$ *Y is PREDed*
$\neq$ *Y is PREDed* $>^c$ *X is PREDed*

Importantly, the passive (123a) does not impact how the arguments of out-PRED are construed with relation to PRED. Moreover, the passive and active examples are mutually entailing; which interpretations are (im)possible is the same for both the passive in (123a) and the active in (123b). As a concrete example, (124a) is unacceptable as meaning something like (124b) or (124c). (In fact, it is unacceptable in all real-world contexts.)

(124) [*Looking at the top 5 most frequently purchased sports cards.*]

a. *Mustangs are **out-bought** by Jaguars. (*Y is out-PREDed by X*)

b. Mustangs are bought more often than Jaguars. $\approx$ *Y is PREDed* $>^c$ *X is PREDed*

c. Jaguars are bought more often than Mustangs. $\approx$ *X is PREDed* $>^c$ *Y is PREDed*

This is predicted by the analysis in (75), where the head responsible for passive merges above *out-*. Moreover, this analysis was seen to have the extra benefit of explaining why out-PREDs are always able to be passivized, even when PRED's argument structure need not support it – see §3.4.

Unexpectedly, there are a limited number of examples with passive surface forms (*Y is out-PREDed by X*) which do not adhere to the properties just described. In fact, these passives and their corresponding active forms (laid out as (a) and (b) examples respectively in (125)–(127)) are not mutually entailing.

(125) We exist in a culture of influencers where no one wants to miss out, and...

a. ... everyone is in fear of being **out-liked** by the next person. (http://bit.ly/2TUe1za)

b. #... everyone is in fear of the next person **out-liking** them.

(126) [*Looking at the top 20 most and least visited counties in the US.*]

a. Seattle is **out-visited** by Indianapolis. (http://bit.ly/2K3bAup)

b. #Indianapolis **out-visits** Seattle.

(127) Kim Kardashian tried to be the most googled person. She almost succeeded...

a. ... but was **out googled** by one other female celebrity. (http://bit.ly/2TVp0Zl)

b. # ... but one other female celebrity **out googled** her.

These examples, confirmed by native speaker judgments, can be schematized as (128), with both patterns as surprising. (Contrast this the expected pattern, described in (123).)

(128) Unexpected pattern, limited examples:

a. ✓ *Y is out-PREDed by X* [Passive]
$\approx$ *X is PREDed* $>^c$ *Y is PREDed*

b. **X out-PREDs Y* [Active]
$\approx$ *X is in a PRED event/state* $>^c$ *Y is in a PRED event/state*

It seems that some kind of argument inversion and passive morphology is happening within the PRED structure. (The arguments of *out-* map onto the "deep object" of PRED; which is normally not the case.) In other words, it looks as though passivization has applied to PRED, before it merges with the *out-*. Thus *out-* sits structurally higher than the passivization, with regards to these aspects of the passive derivation; in contradiction to (75).

Though this is surprising, it is perhaps even more surprising that, with regards to the comparative meaning introduced by *out-*, the argument in the *by*-phrase is being interpreted as exceeding the argument that is in the surface subject position. In other words, here it looks like passivization sits structurally higher than *out-*, with respect to composition in the comparative semantics that *out-* introduces; as predicted by (75). This means we have contradictory findings: in some properties (semantic composition) passive appears to sit above *out-*, in others (subject-object inversion), it appears to sit below.

Not only is the passivization appearing to be below and above *out-*, as just described, but the active forms of these *be out-PREDed by* cases are simply unacceptable with the same meaning (as schematized in (128b)). As far as could be determined, the only other passive examples that do not occur in the active are ones with idiomatic properties: e.g., *touched by an angel* (meaning "blessed"), *saved by the bell* (meaning "escaped by some last minute intervention"), or *wanted by the police* (meaning "sought after" and not meaning "desired"). These out-PRED examples are not obviously idiomatic: their meanings are rather transparent. Moreover, these meanings are occurring quite productively, with new lexemes like *like* (in the social media sense) and *google* at the core of the out-PRED.

The finding that some passive properties are rooted outside the scope of *out-*, and some are rooted within its complement may suggest that the set of operations called "passivization" needs to be distributed in different syntactic positions. (Sailor 2014 argues that the head responsible for passive morphology and the head responsible for passive surface syntax sit in distinct syntactic phrases.) More work is necessary to determine how to do so in a way that accounts for this unexpected out-PRED passive data, as well as passives more generally. A strong solution would simultaneously be able to explain why the active forms of these passive out-PREDs are unacceptable with the same meaning.

6.2 Summary of Findings

This investigation into the grammatical properties of out-PRED has yielded several generalizations and a specific analysis of its grammatical derivation. There are four elements of this investigation worth repeating here, as a summary.

- **i.** out-PRED is productively formed in the syntax. In its formation, PRED can be morphologically complex and is syntactically active, contributing idiosyncrasies to both PF and LF.
- **ii.** out-PRED has constant and shared properties in argument structure, adjuncts, and passivizability, which reflect that its extended verbal projection is controlled by the *out-* (and by not the PRED).
- **iii.** The *out-* in out-PRED selects a PRED complement, and that PRED projects no arguments.
- **iv.** If felicitous usages of a PRED depend on the local co-presence of an argument, that PRED cannot occur in out-PRED.

These findings support a syntactic analysis of out-PRED that we previewed in the introduction:

(2) $[_{\text{ExtArgP}}$ SUBJECT $[_{\text{IntArgP}}$ OBJECT $[_{\text{outP}}$ *out-* $[_{\text{VP}}$ PRED $]]]]$

This analysis leads to deeper questions about the distinction between semantic and syntactic introduction of arguments, and also uncovers some paradoxical facts about English passives. More generally, this work has consequences for the syntax of argument structure (lending support for a transparently neo-Davidsonian syntax) and for the definition of domain of idiosyncratic interpretation (lending support for one related to the notion of extended projections).

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