# out-PRED: Generalizations and Derivation

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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 a productive syntactic process, which build 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 through a structure in which out- merges with PRED before any argument(s) can merge. This will be further supported by exploring domains in which out-PRED is unavailable; though these domains appear unrelated at the surface, they share deep derivational properties that are incompatible with this sort of out-PRED derivation. The findings of this work have implications for the 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):\(^2\)

\[
\begin{align*}
\text{(1) a. Armageddon} & \text{ outgrossed Deep Impact.} \quad (\text{http://bit.ly/2wUo66w}) \\
\text{b. Google has} & \text{ outdone itself today} \quad (\text{http://bit.ly/1GY0Np0}) \\
\text{c. Neither one} & \text{ outsang the other.} \quad (\text{http://bit.ly/19PZpup}) \\
\text{d. 15-year-old Anna Meyer} & \text{ outearned her dad by playing shortstop in the All-American Girls Professional Baseball League.} \quad (\text{http://bit.ly/2TImtv0}) \\
\text{e. Credit where credit is due - no one can} & \text{ out-Mariah Mariah.} \quad (\text{http://bit.ly/2x4NLK1}) \\
\text{f. Michael didn’t} & \text{ outdance Paul.} \quad (\text{http://bit.ly/1BMalyM}) \\
\text{g. Feral hogs can} & \text{ outcompete and outreproduce deer.} \quad (\text{http://bit.ly/2NYjpPJ}) \\
\text{h. This new big pig} & \text{ outweighs the famous Hogzilla by >25 kilograms.} \quad (\text{http://bit.ly/2EQv0gk}) \\
\text{i. [...] business interests} & \text{ outresearched, outspent, and outlobbied poorly funded and loosely organized groups} \quad (\text{http://bit.ly/1CcGIKq})
\end{align*}
\]

Given the sparse amount of linguistic work on this phenomenon, this paper begins as an exploration of the basic grammatical properties of these out-PRED predicates. This will lead us to conclude that out-PREDs are actively derived in the syntax (i.e., not formed/listed in a pre-syntactic lexicon).

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\^2 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).

\^3 Throughout this paper, naturally occurring data found on the internet is occurs with a link to the source. All data, including these naturally occurring cases, have been verified with informal judgments of a small number of native speakers of American English.
After establishing this, the paper turns its focus to the argument structure of out-PRED. The argument structure of out-PRED is categorically distinct from that of the PRED. After establishing the generalizations, the paper focuses on identifying an appropriate analysis of the structure and interpretation of out-PRED. A rough sketch of the syntactic structure of out-PRED that will be uncovered is given (2):

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

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 by PRED. Instead, both the subject and object are syntactically introduced in the extended projection of out-. The subject and object of out-PRED are both syntactically severed from the lexical predicate, PRED; and in fact PRED occurs with no arguments. This adds to existing evidence for the severance of external arguments from the verbal root and extends the analysis to internal arguments – even for predicates that are otherwise robustly transitive, such as gross (cf. (1a)) or spend (cf. (1i)).

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 have more guns/arms
    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 will suggest that out-PREDs are formed by a productive grammatical process, which produces morphologically complex objects.

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2The 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., eventivity/stativity, case licensing, and different argument-predicate relations, etc.); this work takes no stance on how "ExtArgP"/"IntArgP" relate to the syntax of these properties.

A simple 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/2JZhZI1)
   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)).

(5) a. We would all love to out-Einstein Einstein by coming up with a better theory of gravity. (http://bit.ly/2nctg8B)
   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/BwjmIpmD)
   d. Merkel has out-merked 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/2o8MnWA)
   c. [Jeff has 30 years of experience with sailing and sail racing, making him an expert.]
   Jeff can out-strategize any newcomer (http://bit.ly/2wVluDB)
   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.
   g. [My old oven takes a long time to pre-heat, but my new oven pre-heats very quickly.]
   My new oven out-preheats my old oven.

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 generalization is that out-PRED can be formed on another out-PRED form. This is demonstrated below with out-out-run:

5The 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. In addition, the out-NAME NAME construction, as in (4a), has been noted in the past; for example, a post on LanguageLog (http://itre.cis.upenn.edu/~myl/languagelog/archives/003430.html) discusses these sorts of examples. (In fact, even the OED definition implies that the object of out-NAME ought to be NAME.) However, out-NAME is not restricted to contexts where its object is NAME. (5b–d) shows it can occur with a variety of objects.
I always run faster than everyone in my class, and Kim always runs faster than everyone in their class too. However, Kim always outruns everyone in their class to a much greater extent than I outrun everyone in my 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. 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 base 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 two domains of support for this.

### 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.

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

a. think + -PĆĘę = thought (*thoughted*)
b. out-think + -PĆĘę = out-thought (*out-thoughted*)

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

a. drive + -PĆĘę = drove (*drived*)
b. out-drive + -PĆĘę = out-drove (*out-drived*)
c. drive + -PĆěęPĆěę = /dɹɪvn̩/ (*dɹajvn̩/)
d. out-drive + -PĆěęPĆěę = /dɹɪvn̩/ (*out-*/dɹajvn̩/)

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

a. do + -PĆĘę = /dɪd/ (*dud*)
b. out-do + -PĆĘę = out-/dɪd/ (*out-/dud*)
c. do + -PĆĘęPĆęę = /dʌn/ (*dun*)
d. out-do + -PĆĘęPĆęę = 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).

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6Based 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.).

7The 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.)

8In the sense of steering a vehicle.
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 allow a trajectory of regularization, similar to what can be observed in cases of derivational morphology or compounding, like (13) and (14).

(13) Past forms for (green)-light
   a. light + -PAST = lit
   b. green-light + -PAST = green-lighted

(14) Past forms for (pile)-drive
   a. drive + -PAST = drove
   b. pile-drive + -PAST = pile-driven

When occurring alone as verbal predicates, light and drive have irregular past forms (lit and drove), but the regular past form can be used when they occur as part of compounds like green-light (green-lighted) or pile-drive (pile-driven). Conversely, when drive occurs in out-PRED contexts, the regular past form (out-driven) is blocked in the same way that driven is blocked for the past form of drive. (This illustrates the fact that past tense regularization is possible in compounds, and impossible in out-PRED.) In other words, out- does not affect allomorph selection, in the familiar way that verbal prefixes like re- also do not affect allomorph selection. 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 allomorphy.

2.3 (Non-)Stativity of out-PRED

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. 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. Moreover, static verbs allow an ongoing reading in the simple present tense form, and non-static 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:

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9The 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.
10Three possible explanations for an example like pile-drived: (i) pile-drive is listed as its own atomic lexical item, (ii) pile-drive is morphologically derived but drive is not treated as a verb in the derivation, (iii) drive is treated at a verb in the derivation of pile-drive, but not with the right kind of locality or visibility at the relevant level of the derivation where tense enters into play.
11This 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.
12A 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.
(15) a. I just weighed Fido; he {weighs / *is weighing} 20kg.
   b. I just weighed Fido; he {outweighs / *is outweighing} the other dogs here.

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

(17) 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} the second years.

(18) 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.

(19) 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.\(^\text{13}\)

(20) **Generalization 3: out-PRED and PRED share lexical stativity**

The contexts in which PRED can occur in the progressive with an ongoing-event/state interpretation are the same as the contexts in which out-PRED can occur in the progressive with 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.

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 (lexical) stativity/dynamicity 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 (allo-morphy), and interpretation (stativity/eventivity). 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.

(21) **Meta-Generalization 1: out-PRED is syntactic**

out-PRED formation is a productive syntactic process of English, building on 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-[strateg-ize]), a prefix

\(^{13}\)Another canonical diagnostic related to telicity is the ability to use adjuncts such as in an hour. Here the judgments seem to vary. 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.
(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 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

Let us begin with some basic interpretive properties of out-PRED. First and foremost, note that *SUBJECT out-PRED OBJECT* is *never* interpreted such that the subject is acting upon the object. Instead, we can summarize an abstract interpretation for *out-* in the following way:

<table>
<thead>
<tr>
<th>Abstract interpretation of out-PRED</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>SUBJECT in a PREDICATE-type event/state, in some way better than OBJECT</em></td>
</tr>
</tbody>
</table>

Consider some out-PRED examples in (23), which are paraphrased with this interpretation.

| (23) | a. She **out-cooked** Julia Child. |
|      | ≈ “She participated in a cooking event, in some way better than Julia Child.” |
| b.  | Paul clearly **outwrites** John on Abbey Road and on Let it Be |
|      | ≈ “Paul clearly participates in writing events on Abbey Road and on Let it Be, in some way better than John.” |
|      | (https://amzn.to/2CeacyN) |
| c.  | …the KDs will **out-glow** and **outlast** the other two. |
|      | ≈ “The KDs will participate in a glowing event and a lasting state, in some way better than the other two.” |
|      | (http://bit.ly/2NUc3xz) |
| d.  | Sweet Potato **Out-Yields** Corn in Ethanol Production Study |
|      | ≈ “The sweet potato participated in yielding events in an ethanol production study, in some way better than the corn.” |
|      | (http://bit.ly/2LElIGg) |
| e.  | My book club can **out-drink** your book club. |
|      | ≈ “My book club can participate in drinking events, in some way better than your book club.” |
|      | (http://bit.ly/1HUJmVUP) |
| f.  | 78-Year-Old Natator Says He Can **Outfloat** Rivals |
|      | ≈ “A 78 year old natator says he can participated in floating events, in some way better than his rivals.” |
|      | (http://bit.ly/1FJXJ2w) |

The dimension along which the subject is/does better than the object is left underspecified, and can be contextually determined. For example, in (23a), 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 (23f), the 78 year old may 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.

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14An 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/2ev2Wm) |

Here the *market average* is not interpreted as participating in the event (thereby not conforming to the interpretation in (22)). 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 (71)–(68) and surrounding discussion.
The interpretation laid out in (22) is like that of a comparative, whereby the target and standard of comparison map onto the subject and object of out-PRED, respectively. 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 (23a), both she and Julia Child are interpreted as agents in cooking events. (i.e., The object of out-PRED is not construed as an object of PRED: Julia Child cannot be interpreted as a thematic object of cook, even though it is the object in the out-cook clause.)

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, (24), a patient or theme, (25), an experiencer, (26), or a holder, (27).

(24) **Agents of an event**  
   a. Gorbachev is outmaneuvering his critics.  
   b. In all seriousness tho, can CB outdance Janet?

(25) **Themes of an event**  
   a. This hard stone out-sparkled even more costly precious gems [...]  
   b. I still think Samsung’s hardware outshines its software.

(26) **Experiencer of an event**  
   a. Students [doing X] outrecalled students [doing Y].  
   b. And a bear can out-smell even a bloodhound.

(27) **Holders of a state**  
   a. This food outlasts even a Twinkie.  
   b. Mobile devices outnumber people.

As mentioned, the subject and object in a given out-PRED clause must share the same relation to that event/state. For example, it cannot be that the subject is interpreted as an agent of the event while the object is interpreted as the patient of an event. Consider the out-PRED outsell, as in (28):

(28) a. He outsells all our other salespeople.  
   b. Mustangs are outselling all other pony cars now.  
   c. #Mustangs outsell all our salespeople.

The subject and object could be construed either as agents, as in (28a), or as patients, as in (28b). However, you cannot mix these: (28c). In order for (28c) to be coherent, either Mustangs would need to be a possible agentine seller, or salespeople would need to be a possible patient of selling.

We can summarize the interpretive characteristics of out-PRED as (29).

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

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

15 The goals of this paper are to lay out a broad-level understanding of the out-PRED phenomenon in theoretical terms. For that reason, this paper will not aim to deeply understand how, if at all, the formal properties of comparatives derivationally relate to the formal properties of out-PRED. The issues related to comparatives certainly merit their own investigation, which may yield a more complete view on the structural properties of out-PRED.
3.2 Arguments of out-PRED

Because the arguments of out-PREDs are construed as participating in events/states named by PRED, one might expect them to be semantic arguments of that PRED. (After all, this is what happens as a general case with PREDs and their arguments.) However, perhaps surprisingly, there are many cases where the subject/object of out-PRED cannot be an argument of PRED. This is demonstrated with some representative examples below, 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.

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

(31) 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).

(32) a. I was out-numbered.
    b.*I was numbered (one).
    c.*I numbered (one).

(33) a. You out-muscle us.
    b.*You muscle.
    c.*You muscle {them/ourselves/...}.

(34) a. We out-smarted them.
    b.*We smarted.
    c.*We smarted {them/ourselves/...}.

(35) a. She out-Einstein’d Einstein.
    b.?She Einstein’d.\textsuperscript{16}
    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 that treat out-PRED’s subject as the subject of PRED. (We will see additional evidence for this in §5.1.)

Similar evidence that arguments in out-PRED clauses need not be arguments of the PRED come from the fact that \textit{X out-PREDs Y} doesn’t always entail \textit{X PREDs (Z)}, as mentioned in Marantz 2009.

(36) a. I can outpace the bus on my bike.
    b.#I pace on my bike.
    c. (a) does not entail \textit{The bus paces}

(37) a. Aircraft carriers can out-run almost any other boat.
    b.#Aircraft carriers can run.
    c. (a) does not entail \textit{Almost any other boats run}

These entailment facts indicate that how the clausal arguments compose with the meanings of \textit{pace} and \textit{run} differs between out-PRED contexts and PRED contexts. This would not be straightforwardly under-

\textsuperscript{16}While this is not completely unacceptable, it is notable that using \textit{Einstein} as a verb is certainly degraded. The importantly contrasts with \textit{out-Einstein}, which is fully acceptable.
stood if the subject and object of an out-PRED were semantic arguments of the PRED core. This is quite different from other verbal prefixes like over- and re-, in which prefixation does not affect entailment or ability to be a clausal argument.

(38) a. They over-cooked the fish.
   b. They cooked the fish.
   c. (a) entails They cooked the fish

(39) 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, while the argument structure for out-PRED is fundamentally different than PRED. (We will see further evidence for this shortly; see also Tolskaya 2014, Marantz 2009.) If the arguments of out-PRED are not semantic arguments of PRED, then we ought to wonder what they are arguments of. Based on the observations that led to the paraphrastic interpretation in (22), 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 (in some contextually determined fashion) the internal argument, with respect to events/states named by the PRED.

A sketch of this meaning for out- is provided in (40), and a structure for the meaning of out-sing is provided in (41):

(40) ⟦out⟧ = λP λx λy. y >c x, with respect to P-type events/states

(41) out-sing : λx λy. y >c x wrt singing

In this derivation, out-PRED composes with two arguments: the subject and the object of the out-PRED clause. 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 even arguments of the PRED. Nor does out-PRED take two arguments of the same thematic role – out- composes with two arguments in a comparative semantics, 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 are summarized in the generalization in (42).

(42) **Generalization 5: Arguments in out-PRED**

| Arguments in out-PRED are arguments of out-, not arguments of PRED. |

This generalization and analysis can straightforwardly explain how Atlanta out-rained Seattle is grammatical when Atlanta rained is not, as witnessed in (30). What rain would do in this analysis is help understand the types of events under comparison, and does not need to introduce Atlanta or Seattle as arguments. This similarly accounts for why X outruns Y need not entail X runs in (37): 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 (43a) like (43b–c):

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17See Tolskaya 2014 for discussion and a similar idea, but a formalization that is ultimately incompatible with the analysis provided here, which seems unable to account for the range of data presented here (especially the data in §5).
(43) a. At karaoke, Joanna **out-sang** Matty ...
   b. … but Joanna didn’t sing.
   c. … but Matty didn’t sing.

In order to maintain the generalization in (42), we need an explanation for the infelicity of (43b–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:

(44) a. At karaoke, Joanna was better than Matty at singing ...
   b. … but Joanna didn’t sing.
   c. … but Matty didn’t sing.

Though contradictions arise in following (44a) up with (44b–c), it is not because the nominals *Joanna* and *Matty* are arguments of *singing*. For example, the contradiction in the followup in (44b) *does not* arise from the derivation of (44a) having an argument structure with the meaning \([\text{sing}](\text{Joanna}), e\). Instead of owing to argument structure, the contradictions in the follow-ups in comparative cases like (44b–c) can be due to the interpretive relations set-up by the shared comparative semantics. Extending this analysis to out-PRED cases like (43b–c), we can maintain an understanding where the arguments in out-PRED are not arguments of PRED.

This analysis in which the subject/object of out-PRED are arguments of *out-* will play a role in understanding why out-PRED is blocked where it is. Further evidence for this approach will be provided in the following sections.

### 3.3 out-PRED’s 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 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. 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.

(45) a. The fidget spinner will spin when you click on it.  
   b. [… ] the r188 bearing spinner will **out spin** the 608 spinner.

(46) a. This candidate polls well.
   b. This candidate **outpolls** that candidate.

(47) a. After being dropped, a tennis ball will bounce.
   b. This particular ball will **out bounce** a tennis ball any day[…]

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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.*
(48) a. [...] the Mustangs are selling, but I have yet to see one [...]  
    b. Mustangs are **outselling** all other pony cars now.  
    (http://bit.ly/2WnAbAc)  
    (http://bit.ly/2O4OQaY)

(49) 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:

(50) a. The students will think (about syntax).  
    b. The students will **out-think** the teachers.

(51) a. Sleeping Beauty slept (a long sleep).  
    b. Sleeping Beauty **outslept** the dwarfs.

(52) a. The stone sparkled.  
    b. This hard stone **out-sparkled** even more costly precious gems [...]  
    (http://bit.ly/30WPSN7)  
    (https://tcrn.ch/2GwZDum)

(53) a. I think the hardware shines.  
    b. I still think Samsung’s hardware **outshines** its software.  
    (https://tcn.ch/2GwZDum)  
    (http://bit.ly/2Gvjg6b)

As a final case of PREDS that occur in intransitive clauses, let us consider some 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.)

(54) a. Kanye is gonna Kanye.  
    b. Kanye is gonna **out-Kanye** himself.  
    ≈ “Kanye will behave in a typical ‘Kanye’ way to a greater degree than he normally does”  
    (http://bit.ly/2wIHinu)

(55) 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/2EVLNey)

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**:20

(56) a. Road Runner is always going to **outwit** him.  
    b. [...] the Kree **out gun** the Chitauri.  
    c. We **outfoxed** the party leaders  
    d. ‘Blade Runner 2049’ **outclasses** original  
    (http://bit.ly/2I3j2mt)  
    (http://bit.ly/2K3DeqB)  
    (https://reut.rs/2wDAEyP)  
    (http://bit.ly/2XG2mXi)

These typically nominal and adjectival PRED stems in (54)–(55) do not occur with objects in contexts beyond out-PRED, while the out-PRED that contains them **must** have an object. These data are fundamentally the same as all other PREDS we have seen that do not typically occur with objects, in (45)–(53): the out-PRED clause always has an object.21

In addition to PREDS that typically occur without objects, PREDS that typically occur with objects can also occur as out-PREDs.22 As before, the out-PRED clauses are mono-transitive. Moreover, as shown in the

20There 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*.

21There 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/2F6y8A4). 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.

22It has been suggested that what is happening in these cases is that the verbs are being coerced into an intransitive activity reading. Without disagreeing, such an intuition begs an analysis of what it means to coerce an activity reading. In fact, the
(c) examples below, the sort of object that can normally occur with PRED cannot occur as an object in out-PRED.

(57) 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).

(58) 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).

(59) a. He spent his inheritance.
      b. He **outspent** his siblings.
      c. He **outspent** (*his inheritance) his siblings (*his inheritance).

(60) a. Fido weighs 20kg.
      b. Fido **outweighs** Rex.
      c. Fido **outweighs** (*20kg) Rex (*20kg).

(61) 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 object of the transitive PRED is to appear at all in an out-PRED clause, it requires various periphrastic means to be introduced, as in (62).

(62) 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 (62), it seems unlikely that these objects are objects of the PRED at some other stage of syntactic derivation.

Though out-PRED can be formed with such robustly transitive PREDS, the acceptability is sometimes constrained by recoverability of the internal argument(s). For example, the examples in (63) and (64), 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 (63b) were spoken out-of-the-blue, at the batting cages should provide enough context (for those familiar with batting cages) for the listener to understand that **out-hit** likely means hit baseballs more regularly / farther.

(63) [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)
(64) [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.

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.

(65) a. Jackie donated money to museums.

b. Jackie **outdonated** Lisa.

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

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

b. We **outgave** one of the local hospitals.

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 (57)–(66) 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.

(67) **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 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).

(68) a. She cooked tofu.

b. Tofu was cooked (by her).

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

d. Julia Child was **out-cooked** (by her).

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

b.*This ball bearing is spun on by my fidget spinner.

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

d. Your fidget spinner is **out-spun** by mine.
(70) 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.

(71) 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 (72d); even though snow outside of out-PRED does not support passivization, as in (72b):23

(72) 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.


These data are representative of the fact that out-PRED can always be passivized; this is stated in the generalization in (73):

(73) **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 (71), where a verb with both a subject and an object cannot be passivized.24 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). Following this, because passivization can always occur apply to an out-PRED, it 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 (74).

(74) [ PASSIVE [ out- [PRED]]]

This serves to explain why the argument “inversion” in passive out-PREDs applies to the arguments of out-, and not to those of PRED. That is, the active out-PRED in (75a) is passivized as (75b), but not as (75c) or (75d).

(75) 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."

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23When 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.

24There are other transitive clauses that also resist passivization (see, e.g., Ahn and Sailor 2014).
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 (75c). 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 (75d). (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 instrument adjuncts (the (b) examples below) even where PRED does not (the (a) examples below).

(76) 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)

(77) a. #David is smart with limited weapons. (#instrumental with)
  b. [...] the much smaller David outsmarted him with limited weapons. (http://bit.ly/1OXjYI1)

Instrumental PPs are known to be very high adjuncts, and they depend on the structure related to agentivity (see, e.g., Reinhart 2016). In (77b), the instrumental PP with limited weapons has an agent to license the modification, while no such agent exists in (77a), because the adjective smart lacks the relevant structure.

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.

(78) Katie ate (pizza) with a fork

(79) Katie out-ate Pete with a fork.
  a. ≠ In terms of eating with a fork, Katie out-did Pete.
  b. ≈ In terms of eating, Katie out-did Pete, and she out-did Pete using a fork.

What (78) shows is that eat can support an instrumental PP, when it occurs as the main clause predicate. However, in out-eat clauses like (79), an instrumental PP does not modify the eat PRED. If it were able to, the interpretation should be as in (79a): where out- scopes over eat with a fork. Instead the only interpretation is in (79b), where the instrumental scopes over out-.

A generalization that encompasses these facts about instrumental adverbial modifiers is given in (80):

(80) 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-, while the extended projection of PRED cannot support those adverbials. This is further evidence that the bulk of the structure of the out-PRED clause is determined by out-.
This result 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 of 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.

(81) **Meta-Generalization 2**: out- as 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.

### 4 Deriving out-PRED Generalizations

In §2–3 we uncovered facts and generalizations about productivity (8), allomorphy (12), stativity (20), interpretation (29), predicate-argument relations (42), argument structure (67), passivization (73), and adverbials (80). The key ideas of these findings are represented in two meta-generalizations, repeated below.

(21) **Meta-Generalization 1**: out-PRED is syntactic

out-PRED formation is a productive syntactic process of English, building on the structure for PRED.

(81) **Meta-Generalization 2**: out- as 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 active and responsible for syntactically low ("lexical") properties, such as root allomorphy and stativity, but does not project any arguments. On the other hand, out- is responsible for syntactically higher properties (monotransitive argument structure, passivizability, and instrument adverbial licensing). 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 is that structures that have been built cannot be destroyed, as a result of subsequently merging a syntactic morpheme. This has been formalized as Koontz-Garboden’s (2007) Monotonicity Hypothesis: adding morphemes cannot destroy syntactic structure. More generally, such a destruction of structure would violate the No Tampering Condition and the Extension Condition (cf. Collins and Stabler 2016). This has consequences for how “argument suppression” operations (as described for, e.g., passives, middles, inchoatives, etc.) can be modeled. 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 established argument.

A second set of views adopted here, which will require slightly more discussion, relates to the relation-
ship between morpho-phonological forms and morpho-syntactic structures. This work assumes a ‘late-insertion’/‘realizational’ model of morphology. In such a model, the narrow syntax builds up abstract structures, on the basis of abstract syntactic features. 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 demonstrate some of the benefits of this sort of model, consider the range of grammatically distinct contexts that the form sell can occur in, in (82).

(82) 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 DM) 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 (82).

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 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., √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). 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.

A benefit of this system that is relevant to the problem of out-PRED has to do with the allomorphs of the sell verbs (82a–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

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25Realizational 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 and Svenonius 2012, Svenonius 2012, Ramchand 2018) or to terminal nodes (e.g., Halle and Marantz 1993, Marantz 1994, Embick 2010, Arregi and Nevins 2012, Bobaljik 2012). The precise implementation of the realizational model does not have direct bearing on the matter at hand (out-PRED).

26In 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).

27Not all predicates contain lexical roots (e.g., all uses of English have; Myler 2016).

28For extensive discussion of whether a √ selects any arguments, see Harley 2014a and the response papers in volume 40(3/4) of Theoretical Linguistics.
those of out- (cf. (81)), 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. (21)), the fact that PRED's internal arguments do not merge cannot reduce to PRED not merging.

Moreover, because of Monotonicity, 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 (82): 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.

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 (83a), in which the PRED stare has one internal argument, at her mother. Under the analysis pursued here, the syntax of the argument structure would be as in (83b), 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.29

(83) a. She stared at her mother

b. 

```
(84) λe. [[stare](e) & AGENT([[she],e) & THEME([[at her mother],e)]
```

A syntax like (83) 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 (85a), is provided in (85b).

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29 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.3.
In accordance with our earlier out-PRED generalizations (namely (81)), the arguments of the clause are syntactically introduced in the extended projection of out-. PRED merges in (85), but without enough of an extended projection to support any arguments.\(^{30}\) (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 (85) makes sense of earlier generalizations we saw, with regard to properties that are syntactically 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 internal argument in out-PRED contexts is the result of _out-_ merging with a structure that is too small to support PRED’s arguments. There is no violation of Monotonicity to achieve this “suppression”. (This is similar to the case of middles and anti-causatives lacking external arguments, 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 arguments that can occur with a PRED are introduced higher than the PRED VP.\(^{31}\) To be clear, if the internal argument were merged within the VP, it would be impossible for robustly transitive PREDs like those in (86) to occur in out-PRED, as in and (87), counter to fact.

\[(86)\] _Weigh_ and _produce_ with their obligatory objects

- a. Fido weighs *(20kg).
- b. Speaking of red wine, France usually produces *(it).

\[(87)\] _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).

This means that the objects in (86) are _not_ obligatory due to an inherent property of the verbs _weigh_ and _produce_.

\(^{30}\)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.).

\(^{31}\)It may be the _some_ PREDs to lexicalize 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.
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.

### (88) Idioms consisting of verbs and an internal argument

a. We shot the breeze.

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

### (89) The verb have

a. We have cars.

b.*We outhave them.

### (90) Change-of-State unaccusatives

a. The mugs dried.

b.*The mugs outdried the glassware.

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 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 consider 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 (91a-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 (91d), the idiosyncratic interpretation of the predicate does not depend on an internal argument, but it does depend on an external argument.\(^{32}\) Finally, in (91e), 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.

### (91) 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 hit me.

≈ I became very enthusiastic about acting.

\(^{32}\)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.
e. Ryanair always nickel-and-dimes you.
\[ \approx \text{Ryanair always charges you with many small fees that end up being significant} \]

A definitional property of idioms is that the idiomatic interpretation requires that all components of the idiom must be present. (This is in fact how one identifies which components of an utterance form the idiom, and which are ancillary.) As a demonstration of the fact that books is a core chunk of the idiom, compare (91a) 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 must be fully specified for the 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. Moreover, some idioms even allow for passivization to rearrange the idiom chunks (see Fraser 1970 and Richards 2001 among many others), as demonstrated in (92).

(92) 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 allow passivizable; cf. (92c). 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).

For this reason, the relevant interpretive domain of the idiom cook the books must include, minimally, the VP and the IntArgP for (91a-b) – this is exemplified in (93a). For idioms like (91d) that specify an external argument, the relevant interpretive domain must minimally include the ExtArgP – this is exemplified in (93b).

(93) a. [\[\underline{\text{Julie}} \underline{\text{the books}} \underline{\text{cook}}] \text{ExtArgP} \text{ExtArg'} \text{IntArgP} \text{IntArg'} \text{VP} \text{DP} \text{DP} \text{ExtArg}^0 \text{ExtArg}^0] \leftarrow \underline{\text{underline = idiom chunks; must be interpreted together}}
5.1.2 Idioms and out-PREDs

With this understanding of idioms, we can turn now to how idioms interact with out-PRED. On the basis of the analysis in §4.2, where a PRED never surfaces with its arguments, we might predict that an idiom composed of a verb and an object should be unacceptable in out-PRED contexts, as the object of the verb never surfaces. This prediction is borne out in (94a–c), where the idioms rely on both a verb and an object.

(94) 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 interpretations rely on all components of the idiom being present, and since the object idiom chunks are missing in out-PREDs, (94a–c) are straightforwardly understood to lack idiomatic interpretations. In the case of (94a), the idiomatic interpretation is lost because the books of *cook the books* never merges, and so the idiomatic interpretation that depends on the argument being present in the syntax will fail to arise. On the other hand, the idiomatic interpretation of *nickel-and-dime* remains in out-PRED in (94e) – 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 (94d) should be grammatical. The idiomatic interpretation depends on the verb (*bite*) and a chunk in the subject (*bug*), and in out-PRED the subjects *do* surface in the out-PRED clauses. It is therefore puzzling then that out-PRED does not allow the idiomatic interpretation. Similar findings repeat for another idiom with chunks in both the verb and subject, given in (95a), where the idiomatic interpretation is lost in out-PRED, as in (95b).

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

b. *Wait until the fat lady out-sings* someone. 
≠ 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 (94d), repeated as (96a), alongside its out-PRED derivation in (96b).

(96) a. The travel bug out-bit the acting bug.

(96b)

\[
\begin{align*}
&\text{ExtArgP} \\
&\quad \text{DP} \\
&\quad \text{the travel bug} \\
&\quad \text{IntArgP} \\
&\quad \text{IntArg} \\
&\quad \text{outP} \\
&\quad \text{VP} \\
&\quad \text{bite} \\
&\quad \text{out-} \\
&\quad \text{DP} \\
&\quad \text{the acting bug} \\
&\quad \text{IntArg} \\
&\quad \text{outP} \\
&\quad \text{ExtArg} \\
&\quad \text{ExtArg'} \\
&\text{(\# = no idiomatic reading)}
\end{align*}
\]

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 (96). 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. Since the subject and object in an out-PRED clause are not in the extended projection of PRED (see (21)), 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 (91e) on the one hand, and (91a–d) and (95) on the other.

This analysis can be put 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 (97):

(97) **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 (91d) ought to be emphasized: nothing would block an idiomatic interpretation of (91d) if bug were indeed the subject of bite in the context of out-bite. 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. (If it were, there would be a stage at the derivation where the subject is in the idiosyncratic domain of interpretation, and an idiomatic interpretation should be possible in the same way that it is possible for the passive; cf. (92d).)

### 5.2 Have

Consider now the verbs have and own, which can be used as verbs of possession/ownership. It may be surprising that, even controlling for context, have and own differ in their ability to occur in out-PRED constructions.
(98) a. Morgan has more game consoles than Shannon. [Relational (Ownership) have]
   b.* In terms of game consoles, Morgan out-has Shannon.

(99) 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 (98b) to (99b) 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 (100)–(105), each of which come from chapter 4 of Myler 2016. In all cases, the out-have counterparts in the (b) examples are unacceptable.

(100) a. I have a sister. [Relational (Kinship) have]
   b.* In terms of sisters, I have out-have you.

(101) a. The stadium has two pubs flanking it. [Locational have]
   b.* In terms of nearby pubs, the stadium out-has the library.

(102) a. John had something wonderful happen (to him) today. [Experiencer have]
   b.* In terms of wonderful experiences, John out-had Bill.

(103) 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.

(104) 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.

(105) 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. Moreover, he argues that “[b]ecause have itself is semantically vacuous, all of the thematic content of such sentences comes from have’s [internal argument]” (ibid:.p.277). In this way, 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 (106b), and the annotation of the boxed extended projection of have.

(106) a.* In terms of game consoles, Morgan out-has Shannon.
   b.* [[ExtArgP Morgan [IntArgP Shannon [outP out-[ResultP have ]]]]] extended projection of have

This structure leads to a violation of the Constraint of Interpretive Domains in (97). 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 (97) can predict the unacceptability of out-have in all cases, because have has no internal arguments in its extended projection.

5.3 Change-of-State Unaccusative Verbs

We have now seen two domains in which out-PRED is blocked, which support the analysis that PRED merges in the syntax of out-PRED without any of its arguments in its extended projection. These contexts were blocked as the violated a Constraint of Interpretive Domains, described in (97). 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 (107a), *the floor* is in a clean state, as a result of the event; likewise, for *incisors* and *silverware* and their respective result states in (107b–c).

(107) 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 (107) seem provide similar sorts of meaning as out-PRED clauses. However, out-PRED is unacceptable even in the same contexts; this is demonstrated in (108).

    b.*With this teeth whitening method, *incisors* out-whitened molars.
    c.*The glassware out-dried the silverware, in the dish-drying competition.

Since these examples are intended to mean the same as the grammatical examples in (107), the unacceptability of these examples must relate to the derivation of out-PREDs.

Moreover, the unacceptability of (108) is not a function of unaccusativity; we have seen several examples of out-PREDs where the arguments of the PRED are internal arguments. Compare (108) with (45)–(49), repeated below.

(45) a. The fidget spinner will spin when you click on it.  
    b. [...] the r188 bearing spinner will out spin the 608 spinner.

(46) a. This candidate polls well.
    b. This candidate outpolls that candidate.

(47) a. After being dropped, a tennis ball will bounce.
    b. This particular ball will out bounce a tennis ball any day[...]

(48) a. [...] the Mustangs are selling, but I have yet to see one [...]
    b. Mustangs are outselling all other pony cars now.

(49) a. The signs hung for a long time.
    b. The signs with name-brand tape out-hung those with store-bought tape.

While all of these examples in (45)–(49) and (107)–(108) have arguments that are construed as internal arguments of the PRED, what is different about the unacceptable unaccusative usages in (107)–(108) 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. This raises the question of what these properties are.

A notable derivational property of CoS unaccusatives is that they have been syntactically analyzed as

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33 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.18.)
having their internal argument introduced outside of the XP that contains the PRED (e.g., Hale and Keyser 1993, Cuervo 2003, Dobler 2008, and Alexiadou and Schäfer 2011). This is sketched out in (109), with the predicate √DRY, as in *The glassware dried.*

(109) \[ \text{IntArgP the glassware [ResultP √DRY]} \]

Because the internal argument is severed from the lexical predicate in CoS unaccusatives’ syntax, it may be surprising that CoS PREDs are ill-formed in the out-PRED context, since there is already argued to be a constituent that maps onto the PRED without its internal argument (‘ResultP’ in (109)). In other words, 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 (110).

(110) 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”) that introduces the causer/agent of the change (see references above (109)).

(111) \[ \text{ExtArgP Louis [IntArgP silverware [ResultP √DRY]]} \]

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 surprising then, that out-PRED is indeed possible in this context, as in (112).\footnote{This is despite the fact that CoS causatives otherwise typically "resist object deletion" (Rappaport Hovav 2008:23). However, we have seen that verbs that non-CoS verbs that resist object deletion can occur in out-PRED, e.g., *produce* or *weigh*. See §3.3.}

    b. Comparing teeth whitening methods, dentist treatments *out-whitened* home kits.
    c. Louis *out-dried* Barry, in a dish-drying competition.

The very same CoS PREDs that were unacceptable in out-PRED clauses in (108) are *acceptable* when the arguments of *out-* are construed as external arguments of the CoS PRED, as above. This data 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 (108) 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.
(97) **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.

The logic of this analysis is that, whenever a clause has both an argument to be 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 (113).

(113) 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 (113) 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.)

(114) a. \[\text{ExtArgP Pine Sol } \text{IntArgP hardwood floors } \text{ResultP } \sqrt{\text{CLEAN}}\]
    extended projection of clean
    b. \[\text{IntArgP tile floors } \text{ResultP } \sqrt{\text{CLEAN}}\]
    extended projection of clean
    c. \[\text{ExtArgP Pine Sol } \text{IntArgP Mop-n-Glo } \text{outP out-} \text{ResultP } \sqrt{\text{CLEAN}}\]
    extended projection of clean
    d.* \[\text{ExtArgP hardwood floors } \text{IntArgP tile floors } \text{outP out-} \text{ResultP } \sqrt{\text{CLEAN}}\]
    extended projection of clean

For the causative and unaccusative clauses in (113a–b), the internal argument of the CoS predicate is in the same extended projection as \(\sqrt{\text{CLEAN}}\) – in fact, in both cases, the internal arguments are in the same syntactic position. On the other hand, in (113c), 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 \(\sqrt{\text{CLEAN}}\), and the derivation is able to converge. Finally, in (113d), 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 \(\sqrt{\text{CLEAN}}\), and the result is that the derivation cannot converge with the intended meaning.

In other words, only in (113d), 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 (97). This analysis unifies CoS unaccusative usages with predicate idioms and have, and provides 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 that PRED merges without the functional structure that introduces arguments. This is schematized in (115).

(115) *General analysis of out-PRED:*

```
  ExtArgP
   \_ Subj
     ExtArg’
     ExtArg⁰
       IntArgP
         IntArg’
           IntArg⁰
             outP
               VP
                 \_ VP without any arguments
                 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 (63)), its structure must resemble (116), where there is a phrasal constituent (without any of *produce’s* arguments) that can merge as the sister of `out-`.

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

```
  ExtArgP
   \_ France
     ExtArg’
     ExtArg⁰
       IntArgP
         IntArg’
           IntArg⁰
             VP
               \_ VP without any arguments
               √PRODUCE+v⁰
                 \_ √PRODUCE and its v⁰ verbalizer also included
                 the internal argument, *out-produce* would be impossible to derive. (The verbalizer must be included in this constituent, since the form /prəˈdus/ only occurs in the context of v⁰, 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 (what have been treated as) obligatory objects. It would not be appropriate to analyze the generally robust transitivity of a predicate to the √ 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 √⁰+v⁰ structure that a verb like *produce* realizes is one that requires an internal argument (compare with analyses like Ramchand 2008); a √ and its verbalizer are both present in the PRED structure of out-PRED, without an internal argument. Finally, it cannot be simply 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. 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 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 [√+…+IntArg0] 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 (116) add support to the idea that syntax may transparently correspond to a fully neo-Davidsonian semantics. That is, all arguments separated from the lexical predicate – each introduced by unique semantic functions, which correspond with unique syntactic positions. (See Borer 2005b and Lohndal 2012, among others, for other 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 (40), repeated below. This is why, in out-sell, the arguments can be construed as agents of selling, or as patients of selling.

\[
\text{⟦out-⟧} = \lambda P \, \lambda x \, \lambda y . \, y >^c x, \text{with respect to P-type events/states}
\]

(40) a. We out-sell all other fruit-sellers.
   b. Bananas out-sell plums.

The sentences in (117) 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 (118b), where the arguments of out-buy are both construed as patients, as in (118b).

(118) 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

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35 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 out-PRED.
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 corresponds to structure that is small syntactically introduce any actual 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 morpohemes that are linked to causation (cf. out-strategize or out-whiten). Harley (2013) shows 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 (119), and dentists out-whitened home kits would be as (120):

\[(119) \left[ \text{ExtArgP dentists} \ [\text{IntArgP the teeth} \ [\text{vP } \lambda x.\text{CAUSER}(e,x) -en \ [\text{ResultP } \sqrt{\text{WHITE}}]]] \right] \]

\[(120) \left[ \text{ExtArgP dentists} \ [\text{IntArgP home kits} \ [\text{outP out-} \ [\text{vP } \lambda x.\text{CAUSER}(e,x) -en \ [\text{ResultP } \sqrt{\text{WHITE}}]]] \right] \]

If the v° in the out-PRED of (120) 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 (118b) 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 (121).

\[(121) \quad \text{a. Atlanta also out-rained Seattle in 1922 and 1923.} \]
\[(121) \quad \text{b. You out-muscle us.} \]

Since rain is generally thought to lack arguments, it might seem that examples like (121) should be predicted to be unacceptable in the same way as (118b). (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 (117) and (118), as well as the contrasts in between (118b) and (121).

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 (74), repeated below.
This is used to explain why the active and passive out-PREDs in (122a–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.

(122) Expected pattern, broadly supported:

\begin{itemize}
    \item [Passive] \(Y\) is out-PREDed by \(X\)
    \[X \text{ PREDs} >^c Y \text{ PREDs}\]
    \[\neq X \text{ is PREDed} >^c Y \text{ is PREDed}\]
    \[\neq Y \text{ is PREDed} >^c X \text{ is PREDed}\]
    \item [Active] \(X\) out-PREDs \(Y\)
    \[X \text{ PREDs} >^c Y \text{ PREDs}\]
    \[\neq X \text{ is PREDed} >^c Y \text{ is PREDed}\]
    \[\neq Y \text{ is PREDed} >^c X \text{ is PREDed}\]
\end{itemize}

Importantly, the passive (122a) does not impact how the arguments of out-PRED are construed with relation to PRED. Moreover, the passive and active examples are mutually entailment; which interpretations are (im)possible is the same for both the passive in (122a) and the active in (122b). As a concrete example, (123a) is unacceptable as meaning something like (123b) or (123c). (In fact, it is unacceptable in all real-world contexts.)

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

\begin{itemize}
    \item [Passive] Mustangs are out-bought by Jaguars.
    \((Y\text{ is out-PREDed by }X)\)
    \item [Active] Mustangs are bought more often than Jaguars.
\end{itemize}

This is predicted by the analysis in (74), 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.

However, unexpectedly, there are a limited number examples with passive surface forms \((Y\text{ is out-PREDed by }X)\) 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 (124)–(126)) are not mutually entailment.

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

\begin{itemize}
    \item [Passive] everyone is in fear of being out-liked by the next person.
    \item [Active] everyone is in fear of the next person out-liking them.
\end{itemize}

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

\begin{itemize}
    \item [Passive] Seattle is out-visited by Indianapolis.
    \item [Active] Indianapolis out-visits Seattle.
\end{itemize}

(126) Kim Kardashian tried to break the internet by being the most googled person. She almost succeeded...

\begin{itemize}
    \item [Passive] but was out googled by one other female celebrity.
    \item [Active] but one other female celebrity out googled her.
\end{itemize}

These examples, confirmed by native speaker judgments, can be schematized as (127), with both patterns as surprising. (Contrast this the expected pattern, described in (122).)
Unexpected pattern, limited examples:

a. Y is out-PREDed by X
   $\approx$ X is PREDed $\supset Y$ is PREDed

b. X out-PREDs Y
   $\approx$ X is in a PRED event/state $\supset Y$ is in a PRED event/state

It seems that some kind of argument inversion and passive morphology is happening within the PRED clause. (The arguments of out-map onto the "deep object" of PRED; 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 (74).

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 (74). 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 (127b)). As far as is known, 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 ability to passivize, 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 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:

\[ [\text{ExtArgP SUBJECT} [\text{IntArgP OBJECT} [\text{outP out- [VP PRED]]}]] \]

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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