# Syntactic Alternative Projection

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## 1. Phonologically motivated uses of prosodic focus

Prosodic focus can be used to flag contrasts in phonological form. Bolinger (1961: 93) observes the cartoon caption in (1-a) (Gardner Rea, The New Yorker, April 14 1956, p. 36); (Ladd 2008: 234) reports the BBC news line in (1-b). In both cases, prominence (small caps) falls in an exceptional place, and the repeated material that usually would receive prominence remains unaccented (indicated by underlining):

(1)  a.  In such a case, our first concern is to persuade the patient that he is a stalagMITE.
     b.  Greek divers have found the wreck of the British liner Britannic, sister ship of the TItanic

The parts of the words that exceptionally carry stress and align with the last pitch accent of the utterance, [maɪt] and [taɪ], do not have an identifiable meaning. Apparently non-semantic uses of focus also arise when words are contrasted that appear to share a morpheme, but whose meaning is not compositional:

(2)  a.  'This whiskey,' said O'Reilly, sampling spirits that claimed to be from his homeland, 'was not exported from Ireland; it was DEported.'          *(Bolinger 1961: 83)*
     b.  John is more concerned with affirmation than with conFIRMATION.     *(Chomsky 1971: 205)*
     c.  John expected to be promoted, and was shocked at being DEmoted *(Wennerstrom 1993: 311)*

Alternative Semantics (Rooth 1992), however, proposes that exceptional prosodic prominence flags sites where alternative *meanings* are introduced. F-marked constituents introduce alternative meanings of the same type, here individuals, while non-F-marked constituents contribute only their regular meaning:

(3)  Amal gave up, and then [[∼ C][FRANKIE$_F$ threw in the towel]] (Wagner 2021a)

Alternatives compose pointwise (Hamblin 1973), deriving a set of propositions: {Frankie threw in the towel, Amal threw in the towel,. . . }. A focus operator ∼ ('squiggle') then quantifies over these alternatives and calls for a contextually salient antecedent for *C* whose meaning is a member of this set. This account captures that focus antecedence requires semantic and not syntactic identity: Expressions of form *x gave up* and *x threw in the towel* share a meaning but differ in form. Similarly, *Who called me?* can be an antecedent for *AMAL called you*, provided that *me* and *you* refer to the same individual. Prosodic effects emerge because in the scope of ∼, F-marked material must be more prominent than non-F-marked material (Rooth 1992, Truckenbrodt 1995, see Wagner 2021a for a review).

The puzzle raised by (1) and (2) is now apparent: Alternative Semantics assumes that prosodic prominence flags where meanings are substituted, but [maɪt] and [taɪ] have no meaning; it assumes that alternative meanings compose pointwise, but *demote* or *confirmation* are not compositional.

But should focus theory really be responsible here? Couldn't the exceptional stress be phonologically motivated? Jacobs et al. (2015), e.g., claim that repeated material tends to be reduced, including in cases like homophones, where no meaning is shared; alternatively, Williams (1981, 1997) proposes a "rhyming law", which holds that "the final nucleus of an Intonation unit (roughly, clause) cannot be identical to any final portion of the preceding intonation unit." Could this explain (1) and (2)? Artstein (2002) points out a property of phonologically-motivated focus which, if true, dooms any such phonological explanation:

Outside metalinguistic uses (more on these below), contrasting (['tɑɪtænɪk] vs. ['brɪtænɪk]) implies that the word *meanings* (⟦Titanic⟧ vs. ⟦Brittanic⟧) are contrasted with each other, just as in other uses of focus. The next section provides experimental evidence for Artstein's claim, the remainder of the paper argues that the facts can be captured if we assume syntactic rather than semantic alternative projection.

## 2. Phonological focus conveys a semantic contrast

Consider the words *remember* and *dismember*, the meanings of which do not easily lend themselves to contrast each other. In (4-a), it doesn't seem that the speaker deliberately juxtaposes their meanings. However, one can imagine somewhat contrived scenarios where the speaker clearly does (4-b):

(4)    a.    *No Contrast:* She had a nightmare that she just remembered.
                She dreamt she fought aliens who she all dismembered.
        b.    *Contrast:* No, the nightmare is what she remembered.
                It's the aliens in it that she dismembered.

A phonological account of deaccentutation cannot make a distinction between these two cases, and would predict that speakers shift prominence to the prefix in both cases. However, deaccentuation of *member* seems intuitively much more likely and felicitous in the second case. To firmly establish that this intuition carries water, a production experiment was conducted. It included two additional control conditions:

(5)    a.    *Repetition:* The aliens in the movie were all dismembered. They were all dismembered.
        b.    *New:* Just go to therapy. Your problems will all be dismembered.

Materials included 16 item sets with 4 conditions parallel to (4) and (5). Each participant saw a subset of 16 sentences in a Latin Square design, with an equal number of trials from each condition and one from each item set, so a given target word was seen only once. The data reported here is from a replication of the experiment reported at the conference, with an improved data set that removed some potential confounds due to word order differences between conditions. The experiment was conducted online using the Prosodylab Experimenter (Wagner 2021b), with 32 native speakers of North American English recruited on Prolific. Data was aligned using the Montréal Forced Aligner (McAuliffe et al. 2017).

Fig. (5) illustrates the relative difference in log duration between the first and the lexically stressed syllables as a proxy measure of focus marking. The results suggest that prominence shifts regularly when the two words are used to contrast their meanings, as in (4-b), but not when they are not, as in (4-a), in which case the results were closer to the control conditions without an antecedent for focus marking.
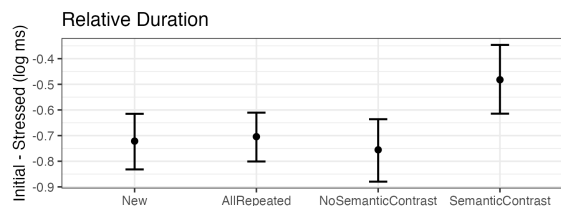


**Figure 1:** Difference in log duration of the initial syllable (e.g., [tɑɪ] in *Titanic*) and the lexically stressed syllable (e.g. [tæn]) for three 4 conditions, with confidence intervals.

A mixed effect linear regression with random effects for item and participant was fit, estimating p-values with lmerTest. Conditions were Helmert-coded. The *new* baseline in (5-b) did not significantly differ from the pooled other conditions with repeated target words ($\beta = 0.06; p < 0.27$); the all-repeated condition did not significantly differ from the pooled data from the (4-a) and (4-b) condition ($\beta = -0.12; p < 0.16$); but crucially, the case without intended contrast in (4-a) differed significantly the case with intended contrast (4-b) ($\beta = 0.28; p < 0.011$). These quantitative results were complemented with qualitative annotations, which are not reported here.

The results support Artstein's claim that even phonologically-motivated foci encode a semantic contrast, and speak against a separate phonological mechanism.[1] Artstein (2002) proposed that meaningless word-parts denote their own phonological form, and evoke phonological alternatives, similar to Williams's (1997) idea of focus based on phonetic rather than semantic content. This will turn out not to be general enough, as we will see when looking at metalinguistic uses of focus. The alternative solution proposed here is that focus alternatives project pointwise in syntax, rather than (just) in semantics.

## 3. Syntactic Alternative Projection and Phonological Focus

Sets of alternative expressions are familiar from pragmatic reasoning, where inferences are standardly made based on utterances that a speaker didn't make. The idea that focus involves syntactic substitutions is also not new. Katzir (2007) and Fox & Katzir (2011) provide compelling evidence that syntax is involved in F-substitution, based on a complexity constraint on alternatives: Substituted for $F$ can at most be as syntactically complex as replaced constituent. This complexity constraint, however, does not require syntactic *projection*. It would be sufficient to require that substituted meaning be generable from syntactic constituents of a certain size, while maintaining Hamblin-style projection. What is new here then is he argument that alternatives *project* in syntax. To implement this, we need a grammar that can quantify over (sets of) expressions. A related idea was proposed in Li (2017), where focus is also calculated over expressions, but instead of projection, a scoping mechanism is assumed, to which we return below.

### 3.1. Metalinguistic access and syntactic alternatives

We can think of a linguistic expression as having three components: A syntactic category, a meaning, and a phonological form. For example, the name *Frankie* is syntactically an NP, denotes an individual, and has the phonological form [frænki]. I will use $\ulcorner . \urcorner$ as an abbreviation to refer to an expression:

(6)     $\delta = \ulcorner Frankie \urcorner = \langle NP; \mathbf{frankie}{:}e; [\text{frænki}] \rangle$

To give grammar 'metalinguistic access', let's assume with Potts (2007) that for any expression, there is also a homophonous and syntactically equivalent expression denoting that expression, an individual of type $u$ for 'utterance': *Frankie* can denote the expression *Frankie*, which in turn denotes an individual:

(7)     $\langle NP; \ulcorner Frankie \urcorner : u; [\text{frænki}] \rangle = \langle NP; \langle NP; \mathbf{frankie}{:}e; [\text{frænki}] \rangle{:}u; [\text{frænki}] \rangle$

Metalinguistic predications provide direct evidence for this duality of use of expressions:

(8)     *Cat* is a noun, has three phonemes, and denotes a furry creature (# and miaows).

Potts uses individuals of type $u$ to explain why *say* can convey both what someone said and which linguistic expression they used:

(9)     Lisa said "Homer is bald"

Potts's analysis involves an *utter*-operator, which takes an individual $b$ and an expression $\delta$, and returns a multidimensional meaning, which $say_q$ then operates over:

(10)     $[\![say_q(\delta \in D_u)(b \in D_e)]\!] = \langle \; [\![utter(\delta)(b)]\!], [\![say(\delta)(b)]\!] \; \rangle$

The same tools will help us to rethink the mechanism of alternative projection. Rooth (1992) assumes a two-dimensional semantics where each expression, in addition to its ordinary meaning, has a set of alternative meanings. The proposal here is that the additional parameter for each expression is a set of alternative linguistic expressions of type $u$, by default the empty set:[2]

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[1] The results also seem incompatible with the claim that *all* deaccentuation is phonological (Tachikawa Shapiro & Anttila 2020), a view that overgenerates in (4-a), but also many other cases, see e.g. the contrastiveness restriction observed in Wagner (2006). It also undergenerates, e.g. it fails to predict focus marking in (3) above.

[2] Note that starting out with the singleton expression itself as default alternative instead of $\varnothing$ (analogous to the singleton meaning in alternative semantics) would not be well-defined.

(11)    ⌜Frankie⌝ = ⟨$NP$; **frankie**:$e$; ∅; [fræŋki]⟩

The operator F, our formalization of F-marking, introduces non-trivial alternatives. In order to avoid infinite regress, alternatives are restricted to the subset of expressions without alternatives ($D_u^\emptyset$):

(12)    F($\delta$) = ⟨$SYN(\delta)$; ⟦$\delta$⟧; {$\delta_i \mid \delta_i \in D_u^\emptyset$}; $PHON(\delta)$⟩

The alternatives to *Frankie* could be any expression the grammar generates. However, many potential substitutions will not lead to well-formed new expressions once we combine them with their surroundings. For example, they must be of the same syntactic category and same semantic type as the original expression for pointwise composition to work. And they will often be additionally restricted to a small set of alternatives expressions with contextually relevant meanings. We can assume that F-substitution is additionally restricted by the complexity constraint proposed in Katzir (2007) (which helps avoid infinite regress), but for the data here this will not be be essential. Applying F to *Frankie* will derive the following:

(13)    $F(⌜Frankie⌝)$ = ⟨$NP$; **frankie**:$e$; {⌜$Amal$⌝, ⌜$Robin$⌝, …}; [fræŋki]⟩

But how can these syntactic alternatives project?

## 3.2. Pointwise Merge and projection

Metalinguistic access allows us to formalize an operator within the grammar itself that composes expressions (the work that Potts assumes is done by proof rules). Let's assume that expressions can denote not just expressions, but also sets of expressions, and that these can combine pointwise to create a new set of larger expressions. ($SYN(\delta)$, ⟦$\delta$⟧, $ALT(\delta)$, and $PHON(\delta)$ access the individual parameters of $\delta$), and I will use ⟦$ALT(\delta)$⟧ as a shorthand for the set of meanings denoted by the expressions $ALT(\delta)$:

(14)    PointwiseMerge:$\lambda\Delta \in \mathcal{P}(D_u).\lambda\Gamma \in \mathcal{P}(D_u).\left\{ \left\langle \begin{array}{c} SYN(\delta) * SYN(\gamma) \\ ⟦\delta⟧(⟦\gamma⟧)or(⟦\delta⟧)⟦\gamma⟧ \\ Alt(\delta) \times Alt(\gamma) \\ [Phon(\delta) \prec Phon(\gamma)]_\omega \end{array} \right\rangle \mid \delta \in \Delta; \gamma \in \Gamma \right\}$

PointwiseMerge combines two sets of expressions by merging each element of the first with each element of the second set. I use * for a shorthand of how the syntactic properties of the new expression is derived from the two parts and well formedness is checked, by slash reduction, if one assumes Categorial Grammar with Potts, or sub-categorization or feature checking depending on assumptions. the meaning of the new expression is composed by function application (only possible if the types match); and the phonological representation is the the concatenation of the phonological representations of the two parts, checking for phonological wellformedness (e.g. making sure the output is minimally a well-formed phonological word, more on this below). Alternatives are composed pointwise as well:

(15)    Pointwise composition of alternatives: $Alt(\delta) \times Alt(\gamma)$ =
$\left\{ \begin{array}{l} \emptyset, \; if \; Alt(\delta) = ALT(\gamma) = \emptyset \\ else: \left\{ \left\langle \begin{array}{c} SYN(x) * SYN(y) \\ ⟦x⟧(⟦y⟧)or(⟦x⟧)⟦y⟧ \\ \emptyset \\ [Phon(x) \prec Phon(y)]_\omega \end{array} \right\rangle \mid x \in Alt(\delta) \cup \{\delta^\emptyset\}; y \in Alt(\gamma) \cup \{\gamma^\emptyset\} \right\} \end{array} \right.$

I will follow Potts (2007) in assuming direct compositionality, where every expression is assigned a meaning, and composition is strictly locally. In a grammar with metalinguistic access, this no longer necessarily implies that there is no represented ellipsis or movement. Potts (2007) shows how ellipsis can be modelled, and if we allow abstraction over individuals of type $u$, we could use function composition to build a compositional theory of syntactic movement. These are issues beyond the scope of this paper.

## 3.3. A 'metalinguistic' theory of focus

In the new focus account proposed here ∼ is a 'metalinguistic' operator that quantifies over the set of alternative syntactic expressions and introduces a presupposition, resulting the alternatives to $\varnothing$:
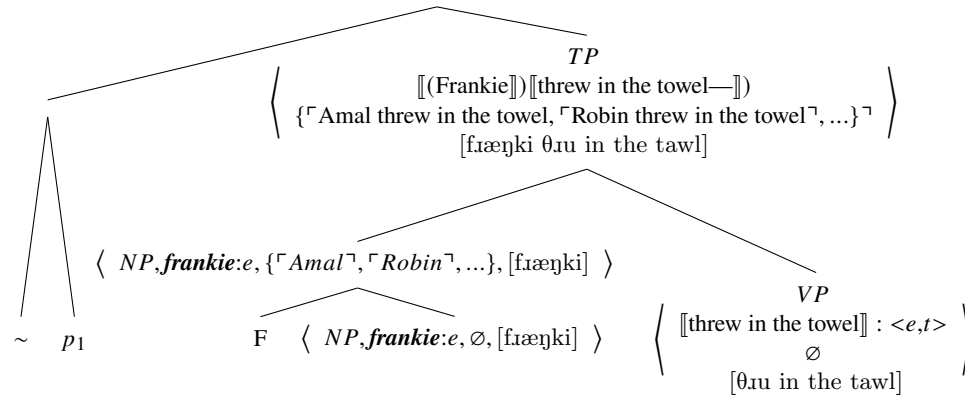
(16)     ∼ $(\delta) = \langle SYN(\delta);\ \textit{focus-presupposition}: [\![\delta]\!]\ ; \varnothing; PHON(\delta)\rangle$

Here's a possible version, inspired by Pott's 2007 analysis of ellipsis, which is similar in effect to the 'individual case' of ∼ in Rooth (1992). It requires a contrasting focus antecedent to have been uttered:

(17)     Potential focus presupposition of ∼ $(\delta)$ based on Potts's operator *utter*:
$\exists \gamma \in D_u.\exists b \in D_e : utter(b)(\gamma)\ \&\ [\![\gamma]\!] \in ALT(\delta)\ \&\ [\![\gamma]\!] \neq [\![\delta]\!]$

Note that we *could* have required $\gamma$ to be an element of ALT($\delta$) rather than its meanings being an element of $[\![ALT(\delta)]\!]$, but then *x gave up* shouldn't license focus marking on *x threw in the towel*:

(18)     $\langle$ *TP*,*focus presupposition:* ($[\![$Frankie threw in the towel—$]\!]$), $\varnothing$, [fɹæŋki θɹu in the tawl] $\rangle$

$$\langle\ TP$$
$$[\![(\text{Frankie}]\!])[\![\text{threw in the towel—}]\!])$$
$$\{^\ulcorner\text{Amal threw in the towel},\ ^\ulcorner\text{Robin threw in the towel}^\urcorner,...\}^\urcorner$$
$$[\text{fɹæŋki θɹu in the tawl}]\ \rangle$$

$$\langle\ NP,\textbf{\textit{frankie}}:e,\{^\ulcorner Amal^\urcorner,^\ulcorner Robin^\urcorner,...\},[\text{fɹæŋki}]\ \rangle$$

∼     $p_1$

F     $\langle\ NP,\textbf{\textit{frankie}}:e,\varnothing,[\text{fɹæŋki}]\ \rangle$

$$\langle\ VP$$
$$[\![\text{threw in the towel}]\!] : \langle e,t\rangle$$
$$\varnothing$$
$$[\text{θɹu in the tawl}]\ \rangle$$

The revised account of focus maintains most of the elements from Rooth (1992), it only revises the mechanism of alternative generation. How does this mechanism help with focus on meaningless pieces?

## 3.4. Early insertion, late interpretation

Let's assume that well-formed phonological shapes are available to grammar as meaningless expressions before they are assigned a meaning. We could call this assumption 'Early Insertion':

(19)     If $\phi$ is a well-formed phonological shape, then $\langle\varnothing;\varnothing;\varnothing;\phi\rangle$ is an expression.

For example, in English, there is a meaningless expression with the pronunciation [mɛmbɹ]:

(20)     $^\ulcorner[\text{mɛmbɹ}]^\urcorner = \langle\varnothing;\varnothing;\varnothing;[\text{mɛmbɹ}]\rangle$

Access to expressions allows us to formalize how expressions receive meaning *within the grammar*. Little *n* could be an operator that turns phonological pieces into meaningful syntactic expressions (or maybe we could decompose further and let $\sqrt{}$ assign meanings to roots, and *n* assign a syntactic category):

(21)     $[\![n]\!] = \begin{cases} ^\ulcorner[\text{baik}]^\urcorner \rightarrow \langle N;\textbf{\textit{bike}}:\langle e,t\rangle;\varnothing;[\text{baɪk}]\rangle \\ ^\ulcorner[\text{taitænɪk}]^\urcorner \rightarrow \langle N;\textbf{\textit{Titanic}}:\langle e,t\rangle;\varnothing;[\text{taɪtænɪk}]\rangle \\ \dots \\ \textit{undefined otherwise} \end{cases}$
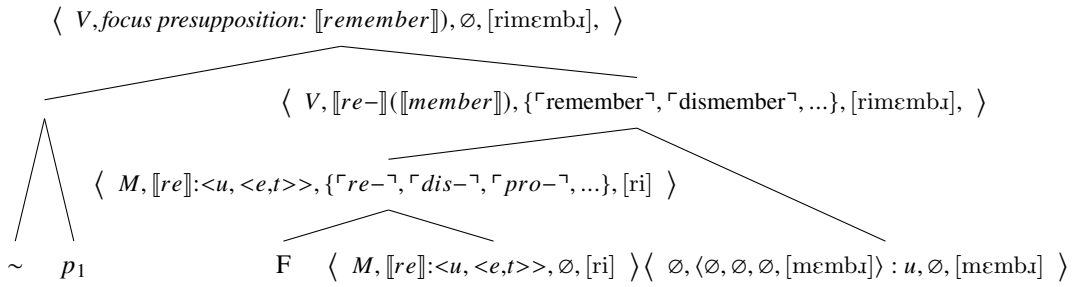
Meaningless expressions can compose before being embued with meaning or syntax ( 'Late interpretation'). The prefixes *re-* and *dis-*, e.g., might map meaningless expressions to meaningful verbs:

(22) $\llbracket re \rrbracket = \begin{cases} \ulcorner[\text{mɛmbɹ}]\urcorner \rightarrow \langle V; \boldsymbol{remember}{:}{<}e,{<}e,t{>>}; \varnothing; [\text{rimɛmbɹ}]\rangle \\ \ulcorner[\text{læps}]\urcorner \rightarrow \langle V; \boldsymbol{relapse}{:}{<}e,t{>}; \varnothing; [\text{rilæps}]\rangle \\ \dots \\ \textit{undefined otherwise} \end{cases}$

(23) $\llbracket dis \rrbracket = \begin{cases} \ulcorner[\text{mɛmbɹ}]\urcorner \rightarrow \langle V; \boldsymbol{dismember}{:}{<}e,{<}e,t{>} {>}; \varnothing; [\text{dɪsmɛmbɹ}]\rangle \\ \ulcorner[\text{ɹʊpt}]]\urcorner \rightarrow \langle V; \boldsymbol{disrupt}{:}{<}e,t{>}; \varnothing; [\text{dɪsɹʊpt}]\rangle \\ \dots \\ \textit{undefined otherwise} \end{cases}$

We can now account for focus marking in *remember*, since the alternatives *re, dis, ...* combine pointwise with a meaningless piece *member* before meanings are assigned:

(24)    No, the nightmare is what she remembered. It's the aliens in it that she ᴅɪꜱmembered.

$$\langle\ V, \textit{focus presupposition: } \llbracket remember \rrbracket), \varnothing, [\text{rimɛmbɹ}],\ \rangle$$

$$\langle\ V, \llbracket re{-}\rrbracket(\llbracket member \rrbracket), \{\ulcorner\text{remember}\urcorner, \ulcorner\text{dismember}\urcorner, \dots\}, [\text{rimɛmbɹ}],\ \rangle$$

$$\langle\ M, \llbracket re \rrbracket{:}{<}u,{<}e,t{>>}, \{\ulcorner re{-}\urcorner, \ulcorner dis{-}\urcorner, \ulcorner pro{-}\urcorner, \dots\}, [\text{ɹi}]\ \rangle$$

$$\sim \quad p_1$$

$$\text{F} \quad \langle\ M, \llbracket re \rrbracket{:}{<}u,{<}e,t{>>}, \varnothing, [\text{ɹi}]\ \rangle \langle\ \varnothing, \langle\varnothing, \varnothing, \varnothing, [\text{mɛmbɹ}]\rangle : u, \varnothing, [\text{mɛmbɹ}]\ \rangle$$

Contrasts with the absence of a constituent seem to be legitimate we well:

(25)    a. I wasn't ʀᴇ$_F$ invited, i was $\varnothing$ ɪɴᴠɪᴛᴇᴅ.    b. I wasn't $\varnothing$ ɪɴᴠɪᴛᴇᴅ, I was ʀᴇinvited.

Maybe *re-* contrasts here with the null expression $\langle \varnothing; \varnothing; \varnothing; \varnothing \rangle$ , and emphasis is realized on the stem because $\varnothing$ cannot carry it, similar to the preferred pronunciation of *invited* when past tense is focused.

## 3.5. Words and other idioms

Early insertion of phonological pieces is the opposite of what is assumed in Distributive Morphology, and yet it is DM-ish in that it separates where pieces are inserted and where syntax and meaning are fixed. All expressions here are treated, in a sense, as idioms (cf. Marantz 1995). This can shed light on how expressions like *ointment* come about, which involve a bound morpheme. Suppose meaningless expressions can combine to create larger expressions before meaning assignment:

(26)    Meaningless meaning composition: If $\llbracket \delta \rrbracket = \varnothing$ or $\llbracket \gamma \rrbracket = \varnothing$, then $\llbracket \delta \rrbracket(\llbracket \gamma \rrbracket) = \varnothing$

Meaningless 'bound' pieces are also found in phrasal idioms, for example *by dint of*, *run the gamut*, *in cahoots with* (Harley & Stone 2013). Let's posit an operator Iᴅɪᴏᴍ, which can assign a new meaning even to already meaningful expressions like *throw in the towel*:

(27)    Iᴅɪᴏᴍ $\in D_{<u,u>}$, such that $\llbracket \text{Iᴅɪᴏᴍ} \rrbracket = \begin{cases} \langle VP; \llbracket\text{throw in the towel}\rrbracket; \varnothing; [\theta\text{ɹow in the tawl}]\rangle \rightarrow \\ \qquad\qquad \langle VP; \llbracket\text{give up}\rrbracket; \varnothing; \theta\text{ɹow in the tawl}\rangle \\ \dots \end{cases}$

The ability to 'overwrite' meanings captures the intuition that phrasal idioms often seem to have their literal meaning at some level, even if it does not enter the overall sentence meaning. What we gain with

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[3] The precise location of meaning assignment is underdetermined by the data here. Meanings could be assigned by *v* or some other head instead. Further study may uncover empirical ways to settle questions like this.

metalinguistic access is that we can assign such apparently non-compositional idiomatic meanings within the compositional system itself. Many questions remain how known syntactic regularities in idioms can be captured, see Kay et al. (2015), Bruening (2020), and Harley & Stone (2013) for discussions.

### 3.6. Ad hoc meaningless decomposition

We now have an account of focus in non-compositional words like *remember*, but what about focus in *Titanic*? Following Artstein 2002, let's assume this involves ad hoc meaningless decomposition:

(28)     $\ulcorner[\text{taɪtænɪk}]\urcorner = \ulcorner[\text{taɪ}]\urcorner + \ulcorner[\text{tænɪk}]\urcorner$:

Words composed of meaningless phonological pieces receive meaning by pointwise composition with *n*:

(29)     $\langle\ N, \textit{focus presupposition:}[\![Titanic]\!], \varnothing, [\text{taɪtænɪk}]\ \rangle$

$\langle\ N, [\![Titanic]\!], \{\ulcorner\text{Titanic}\urcorner, \ulcorner\text{Brittanic}\urcorner, ...\}, [\text{taɪtænɪk}]\ \rangle$

$\langle\ \varnothing, \varnothing, \{\ulcorner[\text{taɪtænɪk}]\urcorner, \ulcorner[\text{brɪtænɪk}]\urcorner, ...\}, [\text{taɪtænɪk}]\ \rangle$

$\langle\ \varnothing, \varnothing, \{\ulcorner\text{tai}\urcorner, \ulcorner\text{brɪt}\urcorner, ...\}, [\text{taɪ}]\ \rangle$

$\sim \quad p_1 \qquad\qquad n \qquad\qquad F\ \langle\ \varnothing, \varnothing, \varnothing, [\text{taɪ}]\ \rangle \quad \langle\ \varnothing, \varnothing, \varnothing, [\text{tænɪk}]\ \rangle$

The decomposition here is truly ad hoc—the speaker chops up the word just to enable prosodic focus marking, even though if the name *Titanic* has a structure at all, it is *titan-ic*. Ad hoc decomposition can also help explain expletive insertion, as in *Ti-frick'n-tanic*. All we need to say is that expletives are operators over expressions that introduce an expressive conventional implicature and return the expression itself. Other operators need access to the meaning of an expression and hence cannot attach to meaningless pieces within words. Ad hoc word-pieces arguably must conform or be made to conform to prosodic word constraints, a constraint we observe both in within-word focus an in expletive insertion. In fact, in the experiment there were two target words with an initial schwa vowel (require, receipt), and prominence was rarely shifted to them, and if it was the vowel was pronounced as [i]. Expletive insertion intuitively favors a pronunciation with a full vowel as well (r[i]-frick'n-quire). [4]

## 4. Metalinguistic uses of focus

Under the analysis here, focus is metalinguistic in that ∼ operates over linguistic expressions.[5] But ∼ is also *not* metalinguistic in that it contrasts *meanings* and not expressions—even in cases of phonologically-motivated focus, as the experiment has shown. However, syntactic projection lends itself easily to account for uses of focus that are truly metalinguistic. Consider (Horn 1989):

(30)     I only eat 'civet de lapin' (⤳ I don't eat 'stewed bunny').

A food snob might report with this sentence that they only eat stewed bunny when it is referred to as *civet de lapin*. Alternative Semantics cannot capture such examples since semantic alternatives do not provide the granularity to distinguish the alternatives involved, since $[\![\text{civet de lapin}]\!] = [\![\text{stewed bunny}]\!]$. If focus involves alternative expressions rather than meanings, we can adapt Potts's analysis of mixed quotation to derive differing alternatives for these examples. The operator *utter* introduces the conventional implicatures that some individual used the expression $\ulcorner\text{civet de lapin}\urcorner$:

(31)     I only [ eat [ *utter* $\ulcorner$civet de lapin$\urcorner_F$ ]]

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[4] Focus is possible even if the generated alternatives do not quite have the desired shape, e.g. *stalagmite* has a voiced [g] (cf. Artstein 2004). Maybe meaning assignment can apply even if the phonology is just close enough.

[5] Buccola et al. (2022) discuss evidence, however, that sometimes focus alternatives cannot be structural.

The operator *only* quantifies over the meanings of the syntactic expressions {*eat* utter *'stewed bunny'*; *eat* utter *'civet de lapin'*}. Each alternative expression comes with its own conventional implicature. If we had projected meanings instead of syntax, *only* would be unable to encode the right contrast because the conventional implicature should project. Projection in metalinguistic focus is possible from islands, and syntactic projection more generally may be island-insensitive:

(32)    I only date people who eat 'civet de lapin' ($\rightsquigarrow$not s.o. who eats it and calls it 'stewed bunny')

Metalinguistic focus shows a limitation of Artstein's account: Analyzing *civet de lapin* as denoting a phonological string and treating the unfocused part as a function from forms to meanings would fail to acknowledge the compositionality of these examples. Syntactic projection can cover both focus on word parts and metalinguistic focus. We can even combine ad hoc composition into meaningless pieces and use the generated structural alternatives metalinguistically, as illustrated in (33):

(33)    We don't serve *utter* [əˈmjuz buʃ], we serve *utter* [əˈmyz buʃ]

## 5. 'Confusing' use and mention at large

Phenomena such as quotation and metalinguistic focus show that grammar can operate and predicate over expressions. This paper argued that if we allow for such 'metalinguistic access,' and in addition assume syntactic rather than semantic projection, various puzzles in focus theory can be resolved. A similar result is achieved in Li (2017) with a scoping mechanism for syntactic alternatives. Li (2017) levels two arguments against an in-situ account, which can't be addressed here in detail: The first is that alternative projection is known not to play nice with quantifier scope (Shan 2004). This issue, however, arguably does not arise if focus alternatives project syntactically, as long as scope-taking can occur separately in each syntactic alternative. Li's second argument relates to selective association in the presence of multiple foci, which is a challenge also for standard Alternative Semantics.

Several other phenomena might require syntactic projection. Echo questions, like focus, they require an antecedent, and antecedence is possible through entailment (*A: Amal threw in the towel. B: WHO gave up*?; *A: Amal called me. B: WHO called you?* (cf. Banfield 1982). This can be captured if *wh*-words in echo questions introduce semantic alternatives which project Hamblin-style to the root (as in Artstein 2002, Poschmann 2018, Beck 2018). But substitutions have to fit syntactically, as well as semantically: In (34), the only meanings of syntactically (but not necessarily semantically) plural nouns qualify (e.g. *scissors'*, but not *knife*); in (b), only the meanings of feminine nouns qualify due to the determiner *die*.

(34)    a. You put these *what* in the drawer?    b. German: Du hast die *was* in die Schublade getan?

Such syntactic matching effects are predicted if the *wh*-word introduces syntactic alternatives, which then project (Wagner 2021c, Ji 2022). The echo question denotation is either simply a set of expressions, or a Q operator converts them into a set of meanings. Syntactic projection also explains why echo questions of any sentence type are possible, including second order questions. Within-word echo questions (*stalagwhat?*, Artstein 2002) can be analyzed parallel to within-word focus.

Another example is disjunction, which is often analyzed as introducing semantic alternatives that can project and are operated over by an existential operator, similar to (at least certain) indefinites (as proposed in Kratzer & Shimoyama 2002, Aloni 2003, Alonso-Ovalle 2006). If disjunctions introduce syntactic alternatives instead, we can explain why disjunction allows for readings that indefinites do not. With (35-a), at least some speakers get an intermediate scope reading under which Sue wants to interview one of the top two runners. (35-b), by contrast, can only convey the (odd) low-scope reading under which there's a unique runner, and the wide-scope reading where I've forgotten which runner it was:

(35)    a.    Sue wants to interview the runner that will come in first or second.
        b.    Sue wants to interview the runner that will take one of the top two spots.

Syntactic projection can derive the set {*the runner that will come in first; the runner that will come in second*}, an existential metalinguistic OR operator can deliver desired meaning. [6] Thinking about

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[6] If syntactic projection is unavailable for indefinites, a mechanism is needed that delivers lowest and widest scope

coordination in terms of syntactic alternatives can also explain syntactic matching effects (*these scissors or knife*), or why coordination is possible within words (cf. Booij 1985, Artstein 2002, 2005): *stalagmite or -tite*. Projection derives the set of expressions {*stalagmite; stalactite*}, pointwise composition with *n* assigns the words meanings. This line of thinking can also help explain expressions like *in turn*, *alternately*, and *respectively* (Harada 2022). Syntactic projection may also improve on Hamblin-style analyses of Alternative questions (Uegaki 2014), which also show syntactic matching effects:

(36)   a.   Does Nadal or Federer come from Spain?      (✓Polar question; ✓Alternative question)
         b.   Do Nadal or Federer come from Spain?       (✓Polar question; *Alternative question)

The impossibility of an AQ reading in (b) follows if alternative questions involve syntactic projection, yielding a syntactic disjunction of two polar questions, following (Uegaki 2014), but now assuming a syntactic generation mechanism. Syntactic projection can also help better understand conjunction and its interaction with expressions like *in turn*, *alternately*, and *respectively* (Harada 2022), which require metalinguistic access (projection with *and* must be much more local than with *or*, however).

Letting grammar operate over expressions renders composition structure-sensitive, similar to structured meaning accounts such as the analysis of metalinguistic focus in Mankowitz 2020, or of echo questions in Sudo 2013). In contrast to structured meanings, however, the only structure needed here is syntactic structure itself, modulo the syntactic projection mechanism proposed here. The cost is that the composition process itself becomes part of part of grammar: Expressions can denote, operate over, and compose other expressions. This kind of self-referentiality can, but does not have to have, paradoxical effects. See Skyrms (1978) and Barwise & Moss (1996) for strategies on how avoid them.

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