

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 stalagMTE.
- 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, [mart] and [tai], 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)

These uses of prosodic emphasis cannot be accounted for by the theory focus based on Alternative Semantics proposed in Rooth (1992), where placing exceptional prosodic prominence on a constituent flags sites where alternative meanings are introduced. Consider the following sentence (Wagner 2021a):

- (3) Amal gave up, and then [[~ C][FRANKIE_F threw in the towel]]

The alternatives of non-F-marked constituents, such as the VP in (3), consist only of their regular meaning. F-marked constituents like *Frankie_F* have multiple alternative meanings of the same semantic type, here individuals: {Frankie, Amal, . . .}. Following Hamblin (1973), alternatives compose pointwise, in this case deriving a set of propositional alternatives: {Frankie threw in the towel, Amal threw in the towel, . . .}. A focus operator ~ (‘squiggle’) quantifies over the alternatives of the constituent it attaches to, and requires that there must be a salient antecedent for *C*, whose meaning is a member of the alternatives set. This correctly 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 *call me* and *call you* have the same meaning. Within the scope of ~, F-marked material must be more prominent than non-F-marked material, resulting in the prosodic effects (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 the substitution site of alternative meanings, but [mart] and [tai] have no meaning; and it assumes that the introduced alternatives project up to ~ by pointwise function composition, but the meanings of words like *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 because of prior

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activation of an auditory representation, including in cases like homophones, where no meaning is shared. 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.” If (1/2) are due to such purely phonological mechanisms, they would not pose a puzzle for focus theory.

Artstein (2002), however, points out a crucial property of phonologically-motivated focus which dooms any purely phonological account: Outside from metalinguistic uses (more on these below), contrasting ([ˈtɑɪtænɪk] vs. [ˈbrɪtænɪk]) implies that the word *meanings* ([ˈtɪtənɪk] vs. [ˈbrɪtənɪk]) are contrasted with each other. If true, phonological focus has the exact meaning expected if Rooth’s ~ is involved—even though there is no way in this theory to generate the requisite semantic alternatives. The next section provides experimental evidence for Arstein’s claim, the remainder of the paper presents a revised theory of focus based on syntactic rather than semantic projection that can explain the facts.

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 whom 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 deaccentuation 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.

Overall, materials included 16 item sets with 4 conditions parallel to (4) and (5), for a total of 64 sentences. Participants were asked to produce 16 of those, in a Latin Square design, where each participants saw an equal number of sentences from each condition, but only one sentence from each item set. This ensures that a participant would only utter a given target word, e.g. *dismember*, once, to avoid carry-over effects between trials. The experiment was conducted online using the Prosodylab Experimenter (Wagner 2021b). We recruited 24 native speakers of North American English on Prolific to participate in the study.

Fig. (5) illustrates the relative difference in log duration between first syllable and the lexically stressed syllable 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.

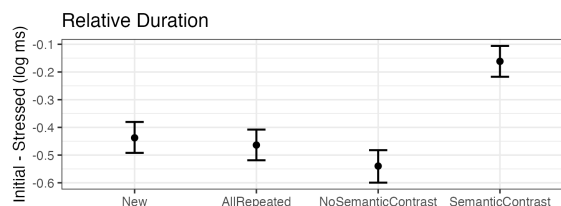


Figure 1: Difference in log duration of the initial syllable (e.g., [tɑɪ] in *Titanic*) and the lexically stressed syllable (e.g. [tæn]) for three 4 conditions, with confidence intervals.

A mixed effect linear regression with random effects for item and participant (including slopes

for condition) was fit for the duration data, estimating p-values with lmerTest. We Helmert-coded the conditions to create three contrasts: The *new* baseline in (5-b) did not significantly differ from the pooled other conditions with repeated target words ($\beta = 0.6$; $p < 0.59$); the all-repeated condition did not significantly differ from the pooled data from the (4-a) and (4-b) condition ($\beta = -0.11$; $p < 0.19$); but crucially, the case without intended contrast in (4-a) differed significantly the case with intended contrast (4-b) ($\beta = 0.36$; $p < 0.002$). These purely quantitative results were further confirmed with qualitative annotations by trained research assistants, which are not reported here.

These results support Artstein’s claim that even phonologically-motivated foci encode a semantic contrast. If a separate phonological mechanism was at play in (4-b), it should also deliver a prominence shift in (4-a).¹ To explain such cases, Artstein (2002) proposed that meaningless word-parts, rather than not denoting a meaning, denote their own phonological form, and under focus introduce alternative phonological forms. This echoes Williams’s (1997) idea of focus marking based phonetic rather than semantic content. Artstein further assumes that the non-focused part acts as a function from phonological pieces to meanings. This could explain why a semantic contrast is encoded. We will see, however, that this solution is not general enough when looking at metalinguistic uses of focus.

The solution proposed here is different: Instead of modifying our assumptions about denotations, we can modify the mechanism by which alternatives are generated. Rather than projecting alternatives in the semantics, syntactic alternatives project pointwise in syntax.

3. Syntactic Alternative Projection and Phonological Focus

Alternatives expressions are familiar from pragmatic reasoning, where inferences are standardly made based on utterances that a speaker didn’t make. The idea that *F* marks the site of syntactic rather than semantic 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 semantic alternatives are generable from syntactic constituents that are sufficiently simple. Crucially, projection could still occur by pointwise function application. What is new here then is the idea that alternatives *project* in syntax. To implement this, we need a grammar that can quantify over (sets of) expressions.

3.1. Metalinguistic access

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 [fræŋki]. I will use $\ulcorner \cdot \urcorner$ as an abbreviation to refer to an expression:

$$(6) \quad \delta = \ulcorner \text{Frankie} \urcorner = \langle NP, \text{frankie}; e; [\text{fræŋki}] \rangle$$

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 the individual:

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

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

$$(8) \quad \text{Cat is a noun, has three phonemes, and denotes a furry creature (\# and miaows).}$$

Expressions denoting individuals of type *u* play a crucial role in Pott’s analysis of sentences like the following, that report both on the content of what Lisa said and which linguistic expression she used:

$$(9) \quad \text{Lisa said “Homer is bald”}$$

¹ They also conflict 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. why can there be focus marking in *Amal threw in the towel*?

We can model this by positing an *utter*-operator that takes an individual b and an expression δ as its arguments, and introduces the conventional implicature that b uttered the expression, and combine that with the meaning of the verb *say*, which denotes that b asserted the meaning of the expression. Potts combines these two aspects into the meaning of a single verb *say_q*, which delivers a tuple of meanings:

$$(10) \quad \llbracket say_q(\delta \in D_u)(b \in D_e) \rrbracket = \langle \llbracket utter(\delta)(b) \rrbracket, \llbracket say(\delta)(b) \rrbracket \rangle$$

Individuals of type u are not just useful when trying to model how quotation works. They also enable us to rethink the mechanism of alternative projection.

3.2. Syntactic alternatives

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

$$(11) \quad \ulcorner Frankie \urcorner = \langle NP; \mathbf{frankie}:e; \emptyset; [\text{fræŋki}] \rangle$$

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):

$$(12) \quad F(\delta) = \langle SYN(\delta); \llbracket \delta \rrbracket; \{\delta_i \mid \delta_i \in D_u^\emptyset\}; PHON(\delta) \rangle$$

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 alternative 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 essential. Applying F to *Frankie* will derive the following:

$$(13) \quad F(\ulcorner Frankie \urcorner) = \langle NP; \mathbf{frankie}:e; \{\ulcorner Amal \urcorner, \ulcorner Robin \urcorner, \dots\}; [\text{fræŋki}] \rangle$$

But how can these syntactic alternatives project?

3.3. Pointwise Merge

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. ($SYN(\delta)$, $\llbracket \delta \rrbracket$, $ALT(\delta)$, and $PHON(\delta)$ access the individual parameters of δ), and I will use $\llbracket ALT(\delta) \rrbracket$ as a shorthand for the set of meanings denoted by the expressions $ALT(\delta)$:

$$(14) \quad \text{POINTWISEMERGE} = \lambda\Delta \in \mathcal{P}(D_u). \lambda\Gamma \in \mathcal{P}(D_u). \left\{ \left\langle \begin{array}{c} SYN(\delta) * SYN(\gamma) \\ \llbracket \delta \rrbracket(\llbracket \gamma \rrbracket) \text{ or } (\llbracket \delta \rrbracket)\llbracket \gamma \rrbracket \\ ALT(\delta) \times ALT(\gamma) \\ [Phon(\delta) < Phon(\gamma)]_\omega \end{array} \right\rangle \mid \delta \in \Delta; \gamma \in \Gamma \right\}$$

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 Categorical 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,

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

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:

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

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.

3.4. A ‘metalinguistic’ theory of focus

In the new focus account proposed here \sim is a ‘metalinguistic’ operator that quantifies over the set of alternative syntactic expressions and introduces a presupposition, resulting the alternatives to \emptyset :

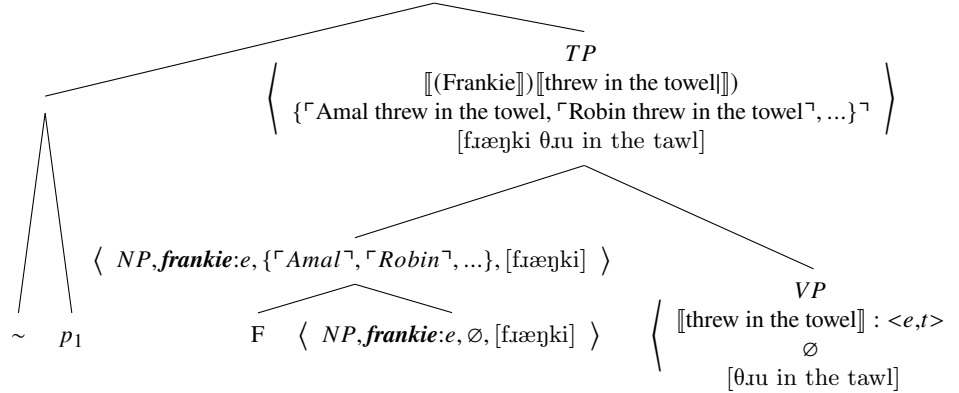
$$(16) \quad \sim(\delta) = \langle \text{SYN}(\delta); \text{focus-presupposition} : \llbracket \delta \rrbracket ; \emptyset; \text{PHON}(\delta) \rangle$$

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

$$(17) \quad \text{Potential focus presupposition of } \sim(\delta) \text{ based on Potts’s operator } \text{utter}: \\ \exists \gamma \in D_u. \exists b \in D_e : \text{utter}(b)(\gamma) \ \& \ \llbracket \gamma \rrbracket \in \text{ALT}(\delta) \ \& \ \llbracket \gamma \rrbracket \neq \llbracket \delta \rrbracket$$

Note that we *could* have required γ to be an element of $\text{ALT}(\delta)$ rather than its meanings being an element of $\llbracket \text{ALT}(\delta) \rrbracket$, but then x gave up shouldn’t license focus marking on x threw in the towel:

$$(18) \quad \langle TP, \text{focus presupposition} : (\llbracket \text{Frankie threw in the towel} \rrbracket), \emptyset, [\text{fɹæŋki θɹu in the tawl}] \rangle$$



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?

3.5. 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’:

$$(19) \quad \text{If } \phi \text{ is a well-formed phonological shape, then } \langle \emptyset; \emptyset; \emptyset; \phi \rangle \text{ is an expression.}$$

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

$$(20) \quad \ulcorner [\text{memb}\mathbf{I}] \urcorner = \langle \emptyset; \emptyset; \emptyset; [\text{memb}\mathbf{I}] \rangle$$

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):

$$(21) \quad \llbracket n \rrbracket = \begin{cases} \ulcorner [\text{baik}] \urcorner \rightarrow \langle N; \textit{bike}: \langle e, t \rangle; \emptyset; [\text{baik}] \rangle \\ \ulcorner [\text{taitænik}] \urcorner \rightarrow \langle N; \textit{Titanic}: \langle e, t \rangle; \emptyset; [\text{tænik}] \rangle \\ \dots \\ \text{undefined otherwise} \end{cases}$$

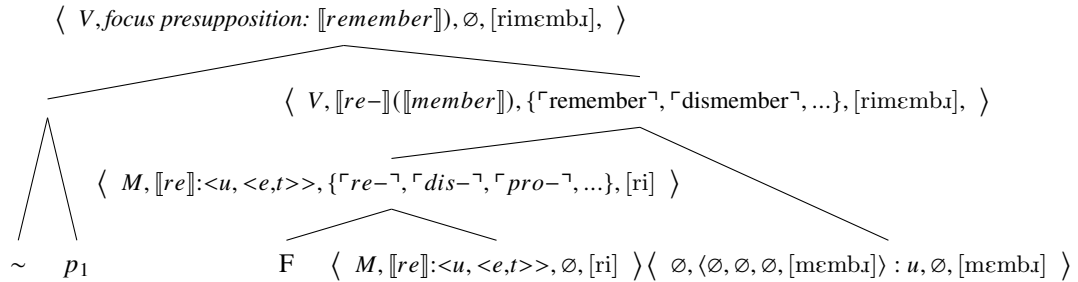
Meaningless expressions can compose before being embued with meaning or syntax (‘Late interpretation’). The prefixes *re-* and *dis-*, e.g., might map meaningless expressions to meaningful verbs:

$$(22) \quad \llbracket re \rrbracket = \begin{cases} \ulcorner [\text{memb}\mathbf{I}] \urcorner \rightarrow \langle V; \textit{remember}: \langle e, \langle e, t \rangle \rangle; \emptyset; [\text{memb}\mathbf{I}] \rangle \\ \ulcorner [\text{læps}] \urcorner \rightarrow \langle V; \textit{relapse}: \langle e, t \rangle; \emptyset; [\text{læps}] \rangle \\ \dots \\ \text{undefined otherwise} \end{cases}$$

$$(23) \quad \llbracket dis \rrbracket = \begin{cases} \ulcorner [\text{memb}\mathbf{I}] \urcorner \rightarrow \langle V; \textit{dismember}: \langle e, \langle e, t \rangle \rangle; \emptyset; [\text{memb}\mathbf{I}] \rangle \\ \ulcorner [\text{rupt}] \urcorner \rightarrow \langle V; \textit{disrupt}: \langle e, t \rangle; \emptyset; [\text{rupt}] \rangle \\ \dots \\ \text{undefined otherwise} \end{cases}$$

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 dismembered.



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

(25) a. I wasn’t REFinvited, i was \emptyset INVITED. b. I wasn’t \emptyset INVITED, I was REinvited.

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

3.6. 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:

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.

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

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 **IDIOM**, which can assign a new meaning even to already meaningful expressions like *throw in the towel*:

(27) $\text{IDIOM} \in D_{\langle u, u \rangle}$, such that $\llbracket \text{IDIOM} \rrbracket = \begin{cases} \langle VP; \llbracket \text{throw in the towel} \rrbracket; \emptyset; [\theta_{\text{IOW in the towel}}] \rangle \rightarrow \\ \langle VP; \llbracket \text{give up} \rrbracket; \emptyset; \theta_{\text{IOW in the towel}} \rangle \\ \dots \end{cases}$

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 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.

3.7. 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) $\ulcorner [\text{tɑrtænik}] \urcorner = \ulcorner [\text{tai}] \urcorner + \ulcorner [\text{tænik}] \urcorner$:

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

(29) $\langle N, \text{focus presupposition}: \llbracket \text{Titanic} \rrbracket, \emptyset, [\text{tɑrtænik}] \rangle$

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 and in expletive insertion.⁴

4. Metalinguistic uses of focus

Under the analysis here, focus is metalinguistic in that \sim operates over linguistic expressions.⁵ But \sim 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’ (\sim I don’t eat ‘stewed bunny’).

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.

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 $\llbracket \text{civet de lapin} \rrbracket = \llbracket \text{stewed bunny} \rrbracket$. If focus involves alternative expressions rather than meanings, we can adapt Potts’s analysis of mixed quotation to derive differing alternatives for these examples (see Li 2017 for a related approach). The operator *utter* introduces the conventional implicatures that some individual used the expression ‘civet de lapin’:

(31) I only [eat [*utter* ‘civet de lapin’_F]]

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 would 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’ (\sim not s.o. who eats it and calls it ‘stewed bunny’)

Analyzing *civet de lapin* as a phonological string and treating the unfocused part as a function from phonological strings to meanings would fail to acknowledge the compositionality of these examples—this is the reason Artstein explicitly excluded uses of focus above the word level from his analysis. Syntactic projection can cover both focus on word parts and metalinguistic focus, and the two can easily be combined, for example in the following, stress in *amuses bouche* shifts to the penult syllable:

(33) We don’t serve [ə’mjuz buf], we serve [ə’myz buf]

Such cases can be analyzed by combining ad hoc composition into meaningless pieces as observed in [‘tɔ:tænɪk] (which allows us to generate the relevant structural alternatives by substituting [mju] with [my]), with the *utter* operator (which allows us to derive the metalinguistic contrast intended here).

5. ‘Confusing’ use and mention at large

Phenomena such as quotation and metalinguistic focus necessitate metalinguistic access for grammar. This paper argued that once we allow for metalinguistic access and in addition assume syntactic projection, this can resolve various puzzles in focus theory. In fact, it may also help resolve puzzles for a much broader range of phenomena. While full analyses remain to be developed, here are some teasers.

Echo questions are similar to focus in that they need 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 (as in Artstein 2002, Poschmann 2018, Beck 2018), which project Hamblin-style. But then why do substitutions have to fit syntactically (as well as semantically)? In (34), the meanings of syntactically (but not necessarily semantically) plural nouns are called for (e.g. *scissors*’, but not *knife*); in the German equivalent (b), the determiner *die* ensures that only the meanings of feminine nouns are called for:

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

Such matching effects are predicted if the *wh*-word in echo questions introduces syntactic alternatives which then project pointwise (Wagner 2021c, Ji 2022). A metalinguistic Q operator delivers the question denotation by taking the set of expressions and returning their meanings. The relation to the echo question functions via entailment, as with focus. Within-word echo questions (*stalagwhat?*, Artstein 2002) can then be analyzed in parallel to the present analysis of within-word focus.

Another example is disjunction, which is often analyzed as introducing semantic alternatives, which are (sometimes non-locally) 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), I can report 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 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*, using the tools proposed here. Projection derives the set of expressions $\{stalagmite; stalactite\}$, pointwise composition with *n* assigns the meanings. Syntactic projection may also improve on Hamblin-style analyses of Alternative questions (Uegaki 2014). Alternative questions also show syntactic matching:

- (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 meanings approaches (e.g., 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 is syntactic structure itself, modulo the island-insensitive syntactic projection mechanism proposed here. The cost is that we made the composition process part of grammar: Expressions can denote and operate over other expressions. Maybe this kind of self-referentiality is in fact the only way natural language can generate complex meaningful 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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⁶ If syntactic projection is unavailable for indefinites, a mechanism is needed that delivers lowest and widest scope for them. A comparison with attested intermediate scope readings for indefinites (Schwarz 2011) would be fruitful.

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