Expressive updates, much?

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Abstract

This paper investigates a novel use of *much* in a construction that has not yet been recognized in the literature – *Angry, much?* – which we dub "expressive *much*". Our primary proposal is that expressive *much* is a shunting operator in the sense of McCready 2010, which targets a gradable predicate and adds a speaker's evaluative attitude about the degree to which an individual stands out on the relevant scale. In particular, we argue that it does so in a way that allows it to perform an "expressive question", which can be understood as a counterpart to a polar question, but in the expressive meaning dimension. In doing so, we present the first example of a shunting expression in English and provide, based on Gunlogson 2008, a new model of the discourse context that allows us to account for the different ways that expressive and non-expressive content enters the common ground.

Keywords: expressives, degree semantics, *much*

1 Introducing expressive *much*

There are classes of expressions in natural language – slurs, interjections, honorifics, discourse particles, etc. – that make no truth-conditional contribution. Much recent work has argued for a multidimensional semantics of these items, where their meaning is contributed in a different layer than truth-conditional content.[1] Against this backdrop, there is growing interest in expressions that move content from one dimension to another. For instance, McCready (2010) considers a Japanese adverbial *yokumo*, which takes a sentential argument, and, in the process of expressing a negative speaker attitude about the proposition it denotes, *shunts* its propositional content out of the truth-conditional dimension. The primary goal of this

1 See, for instance, Barker, Bernardi & Shan 2010; Giorgolo & Asudeh 2012; Gutzmann 2015b; Kaplan 1999; Kubota & Uegaki 2011; McCready 2010; Portner 2007; Potts 2005; Potts & Kawahara 2004.

work is to describe and analyze an under-described construction in English with a degree modifier that we argue has the same *shunting* effect as Japanese *yokumo*. The construction is illustrated in (1), which is a naturally occurring example taken from a comic book, where Gavin's utterance means something roughly like *Wow. You're really rude and it's ridiculous.*[2]

(1) Gramps: *(Slamming the door just in front of Gavin)* Well, Scott isn't here, so scram.
Gavin: Wow. **Rude, much?** (iZombie 14: 21)

We dub this construction »expressive *much*« (henceforth *x-much*).[3] While *x-much* is firmly colloquial, and so it is possible to find English-speakers who do not control the construction, it is not particularly new. The earliest documented example comes from 1978 episode of Saturday Night Live (Sullivan 2010), though OED citations and discussion online pick out the late 1980s and early 1990s as an important moment for the *x-much*, in particular, with its prominent place in the movie *Heathers* and on the TV show *Buffy the Vampire Slayer* (Adams 2003; Dodson 2010).[4] We emphasis its colloquiality because, whether discussing slurs, interjections or discourse particles, colloquial speech is particularly rich is language with expressive content, which we argue is the key to understanding *x-much*. In particular, the expressive account of *x-much* that we develop can explain, not just its semantics, but also aspects of its syntax and discourse properties.

1.1 Overview and main theses

Providing this analysis is not the only goal of this paper, though. The basic facts that characterize the construction are not known, and so this paper

2 Throughout this paper, we use **bold face** to highlight relevant aspects of examples.
3 In a fortuitous convergence of notation, the same construction has been called *x-much* before by Mark Liberman on the Language Log (Liberman 2010), though where *X* is a variable for the expression modified by *much*. Instead, we aim to emphasize the construction's expressive character.
4 Josh Millard from Metafilter actually build three small corpora of instance of *x-much* as used on Metafiler (Millard 2010).

plays an important descriptive role.[5] One overarching descriptive question we tackle is to what extent the *much* we see in the *x-much* construction can be assimilated to *much* in other constructions. In particular, we focus most intently on the comparison of *x-much* to *much* as a VP modifier (VP-*much*) in sentences like '*She doesn't dance much.*' (Doetjes 2007; Doetjes 1997; Rett 2014). The reason is that the *x-much* construction, in virtue of having *much* in post-predicate position, looks like an elliptical version of a VP-*much* construction. One of the core results of this paper is that while we can give the *much* that appears in the *x-much* construction a familiar scale-based lexical semantics (e.g., Rett 2014; Solt 2015), the *x-much* construction is novel and cannot be reduced to other familiar constructions with *much*, including the VP-*much*. Along the way we will consider a variety of syntactic, semantic, and pragmatic questions that are raised by even a cursory look at the *x-much* construction in (1).

First, while marked with question punctuation, the kind of speech act performed by the use of *x-much* is not at all obvious. In this example it certainly does not seem to be answer-seeking. We show that *x-much* utterances are neither questions nor assertions, but expressive utterances, akin to slurs or interjections. In fact, we show that the *x-much* construction is used to make a novel kind expressive utterance that we call an *expressive question*, which is used to align expressive attitudes in the same way that a polar question is used to align propositional attitudes outside the expressive meaning domain.

Second, on the semantic side, note that *much* in (1) directly modifies a bare gradable adjective to generate an evaluative reading. It simply not possible for *much* to do so in other more well known constructions, as we will show below. This raises the question of whether the semantics of *much* in the *x-much* construction can be assimilated to the semantics of *much* in one of its different guises. We argue that *much* can be given a scale-based semantics that is familiar from its other uses. We propose that *x-much* is a predicate of scales, conveying that the individual in question exceeds the contextual standard for the scale. *X-much* additionally contributes a speaker evaluative attitude that the degree the individual stands out on the scale is ridiculous. While we try to closely assimilate

5 The only academic treatments of *x-much*, that we are aware of, are the sociolinguistic/media analysis oriented *Slayer Slang*. A Buffy the Vampire Slayer *Lexicon* (Adams 2003) and talk given by Armstrong, Carmichael & Schwenter (2011) at the 2011 LSA annual meeting. However, even if also speak of the »*x-much* construction«, what they focus on is not quite the same construction we are interested in, because their construction always involves some kind scale reversal, which the phenomenon described in this paper does not exhibit.

x-much to standard *much*, the fact that *much* in the *x-much* construction has a different distribution and range of interpretations has implications for understanding why standard *much* is otherwise somewhat surprisingly more restricted in distribution that you would expect if it could freely modify scales, a fact that has been widely explored (e.g., Corver 1997; Doetjes 1997; Rett 2014; Solt 2010 among others).

Finally, the *x-much* construction above is clearly "elliptical". This raises questions about its syntactic properties, as well as how its semantic properties are compositionally derived. We will argue that the *x-much* construction is not a case of bona fide ellipsis, that is, with unpronounced syntactic structure. Instead, while is internally complex, one of the effects of *much* in the *x-much* construction is to derive an expressive, which in virtue of its semantic type, precludes further composition. This will account for the fact that *x-much*, while appearing elliptical, is actually just unembeddable and can only be used expressively.

Taking each of these considerations into account, our ultimate proposal is that *x-much* targets a gradable predicate and adds a speaker's evaluative attitude about the degree to which an individual stands out on the relevant scale, namely that the degree is large and ridiculously so. In this way, *x-much* is an operator that allows speakers to compositionally derive expressions with expressive content. This is a sharp departure from more well known expressive items, like interjections, which have similar expressive content, but whose content is lexically fixed. While discussed in other languages like Japanese, this is the first time such a shunting operator has been identified in English.

While there is still much work to be done to motivate the proposals outlined above, the resulting analysis fits squarely within recent work on expressive content, and extends that work to interface with richer models of discourse. In particular, the analysis is couched in a multidimensional semantics in the Pottsean tradition (Potts 2005), called *hybrid semantics* (Gutzmann 2015b), which supplements the truth-conditional layer of meaning with a second layer that captures the *use-conditional* meaning of an utterance. Our primary proposal is that *x-much* is a shunting operator in the sense of McCready 2010 – its function is to move content from the truth-conditional to the use-conditional layer.

Finally, the analysis does not stop of the level of the utterance. After determining the content of an *x-much* utterance, we consider how that content enters the discourse. Our focus is on the descriptive fact that *x-much* canonically occurs with rising intonation. We adapt recent work in

Gunlogson 2008 on rising declaratives to explain the effect of rising intonation on utterances, like those with *x-much*, which only have expressive content. This means enriching the context to include, not just sets of propositions to which the interlocutors are committed to, but sets of expressive attitudes as well. With this change in place, an *x-much* utterance can be understood as an "expressive question", which is the counterpart to rising declarative question, but in the expressive meaning dimension. Its primary function is to seek the alignment of attitudes in the use-conditional domain, just as a rising declaratives see alignment in the truth-conditional domain. Though parallel, we are also able to account for differences between rising declaratives and *x-much* utterances, which follow from the fact that use-conditional content is harder to respond to than truth-conditional content.

1.2 Notes on the data used

Before beginning the analysis outlined here, a quick methodological note is required. While it is not difficult to find English speakers with intuitions about *x-much* (one of the authors, in fact, commands the construction), it is clearly not part of standard English. This can make it difficult to do grammaticality judgments, especially in more complex and artificial contexts where register clash is a danger. For this reason, we rely as much as possible on naturally occurring examples from comic books and social media, especially Twitter and Instagram. This type of data is especially helpful for determining the felicity conditions of *x-much* because they include images that display the world against which *x-much* is used. In the case of social media, before including an example in our corpus, we first checked the user's feed to ensure that they otherwise appeared to be a native speaker of English.

2 The syntax of *x-much*

We start with the discussion of the internal and external syntax of *x-much* and compare it with the syntactic distribution of standard *much*.

2.1 The internal syntax *x-much*

The expression *much* belongs to a class of quantity words including *many*, *few* and *little*. These expressions have a wide syntactic distribution, which has raised challenges for a unified semantic theory, though progress has

been made (e.g., Doetjes 1997; Rett 2014; Solt 2015). The quantity word *much*, which is our focus here, occurs in the following core configurations identified by Rett (2016); Solt (2015). First, *much* occurs prenominally as a noun modifier.

(2) There wasn't (that) much wine. (prenominal/attributive)

We also find *much* in its so-called *differential* use productively modifying adjectives, but only in their comparative / excessive forms.

(3) a. The white wine was much sweeter than the red.
b. The white wine was much too sweet. (comparative modifier)

Finally, *much* can be both a PP and a VP modifier.

(4) John doesn't drink wine much. (VP Modifier)

(5) The wine wasn't much over our budget. (PP modifier)

While *x-much*, in virtue of being uniformly final, looks like VP-*much*, we find that is can modify a much wider class of expressions than VP-*much*. In fact, the class of expressions that *x-much* can modify is disjoint from what *much* otherwise modifies.

First, as we have already seen in example (1), *x-much* can target bare adjectives like *rude*. Already this provides a point of contrast with *much* more broadly. While *much* can modify comparative / excessive adjectives, it cannot in other constructions modify a bare adjective like *rude* in (1). In fact, we see the opposite pattern with *x-much*, which instead cannot modify comparative adjectives or excessives, as shown in the example (6).

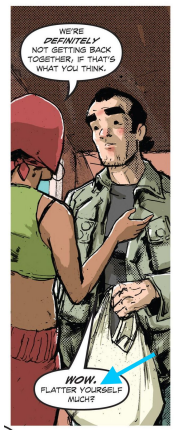
(6) a. *taller (than me) much?!
b. *too tall much?!

This is enough to show that the distribution of *x-much* is distinct from the distribution of *much* across other constructions explored in the literature, but we can see that *x-much* can otherwise modify all of the other kinds of expressions that *much* modifies (and potentially more).

First, there are examples of *x-much* modifying full VPs, like in the following examples. Speakers, though, have the intuition that these are slightly degraded, and more degraded the heavier the VP happens to be.

(7) A: We're definitely not getting back together if that's what you think.
B: Wow. **Flatter yourself much?**

(8) Jeez, **live in denial much**, Chase?



In addition, we also find *x-much* targeting what appear to be verbal heads, that is, expressions of category V°. This is illustrated in the following examples.

(9) A: It's not your precious 720, and what it *is* is none of your concern! Now be off with you!
B: Geez! **Overreact much?!**

(10) A: Guessing Upper West Side? For the shirt?
B: **Presume much?**

While it is of course possible these verbs are embedded in some kind of VP, the fact that they always uniformly appear in the infinitive suggests that we have less structure. Even better, we find examples like (11)-(12) with objectless transitive verbs like *resemble* that are especially hard to detransitivize.

(11) **Resemble much?**

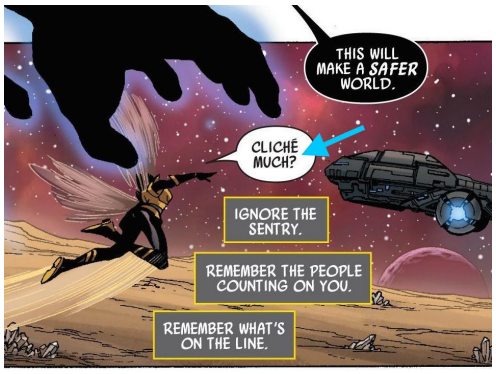
(12) The funniest part of this brilliant Burning Man parody ad is them threating to sue over it. **Resemble much?**

If we do in fact have V°-modification, as the evidence suggests, then this is another way in which the *x-much* construction is unique. There are no other known cases of *much* directly modifying V° heads.

Just as there are attested examples of *x-much* modifying expressions of category V° and VP, we also find *x-much* modifying both noun heads and NPs, as is illustrated by the following examples (see also examples (53)-(54) in Section 4).

(13) A: This will make a safer world.
B: **Cliché much?**

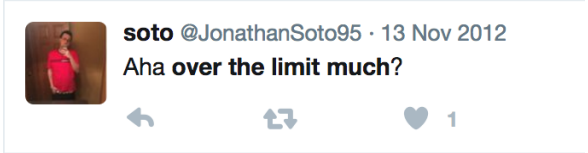
(14) Jeez, **birds of a feather much?** Both of you need to breathe, right?

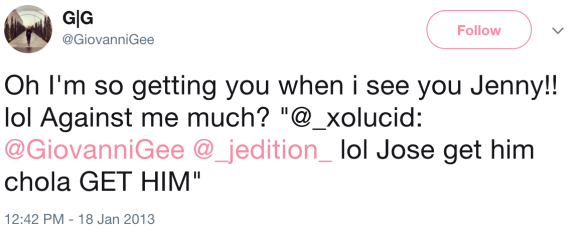


Finally, just like *much* in more familiar constructions, *x-much* is able to modify PPs. We find attested examples like (15).

(15) Aha **over the limit much?**

(16) Oh I'm so getting you when i see you Jenny!! lol **Against me much?**





In contrast to N and V, bare P heads cannot be targeted by *x-much* (and neither by standard *much*).[6]

(17) a. *Over, much?
b. *With, much?

In sum, these data show that *x-much* has a different, though partially overlapping distribution relative to *much* as it has been described in the literature. While it cannot modify comparative adjectives, it can modify bare adjectives – the opposite pattern from standard *much*. Beyond this, *x-much* felicitously combines with expressions of most core lexical categories, including heads of those categories. Table 1 summarizes the distribution of *x-much* in comparison with standard *much*.[7].

	x-much	*much*
bare A	✓	✗
comparative A	✗	✓
N	✓	✓
NPs	✓	✗
P	✗	✗
PPs	✓	✓
V	✓	✗
VP	✓	✗

Table 1: Syntactic distribution of *x-much* and standard *much*

While the particular distribution of *x-much* does not rule out a unified

6 There is a plausible semantic reason for this: While verbs and nouns can provide some quality that can be measured, prepositions, which are inherently relation, cannot and need an argument to provide the right kind of content that can be targeted by *x-much*.

7 Of course, even in cases in which *x-much* and standard *much* overlap, there may still be crucial differences. For instance, *x-much* always appears in a post-target position, while standard *much* precedes its target in many cases. There are also semantic differences which will be discussed in Section 4

account of the lexical semantics of *much* across both *x-much* and more familiar constructions, the distributional data do preclude more straightforward extensions. First, we cannot treat *x-much* constructions as elliptical VP-*much* constructions, which may seem attractive given that *x-much* occurs in post-predicate position. The fact that *x-much* can modify V° heads as well as a variety of expressions directly without even a supporting copula suggests we are not dealing with VP-modification (see Section 4 for semantic arguments against this same idea). Second, the fact that *x-much* modifies bare adjectives, but not comparative adjectives, raises questions for extending recent work on the semantics of *much* to *x-much*. In particular, prominent recent accounts aiming to unify the the semantics of *much* (e.g., Rett 2014; Solt 2015) treat *much* as a modifier of scales, namely sets of degrees. In a scale-based account, though, the modification of comparative adjectives and excessives is the most semantically transparent case, and so it is at first pass surprising that these are out in the *x-much* construction.

2.2 (No) external syntax

Beyond the distributional data, the second major syntactic generalization about the *x-much* construction is that once formed, it cannot be further modified or embedded by any semantic operation. For instance, examples (18a) and (18b) show that an *x-much* construction cannot be conjoined or disjoined with a second clause.[8] Example (18c) shows it cannot be conjoined below the clausal level with other expressions of the same category as the expression modified by *x-much*.[9] It cannot be part of a conditional, neither as the antecedent (18d), nor as the consequent (18e). As (18f) illustrates, the *x-much* construction cannot be modified by modals. Finally, example (18g) shows that the *x-much* construction cannot be embedded under propositional attitude predicates.

(18) a. *Angry, much and he left.
b. *Angry, much or not?
c. *Angry, much and bitter?

8 While we preclude conjunction / disjunction at the clausal level, *x-much* utterances might conjoined / disjoined in discourse. For instance, a reviewer notes *or what* can follow an *x-much* construction as in *Angry, much? Or what?*. We believe these kinds of examples involve two speech acts, which is not surprising given that *or what* can form independent responses (Biezma & Rawlins 2016)

9 Once again, examples like this improve if given two speech acts – e.g., "Angry, much? And bitter!" – which is expected given the behavior of other expressives.

d. *If angry much, I will not talk to you.
e. *If Parker shows up late, angry much?
f. *Maybe angry, much?
g. *He said/asked angry much?

The fact is that *x-much* derives expressions that do not interact with other expressions in any way. This contrasts with all other cases of modification by *much*, including VP-*much*. As we will argue later, this non-interaction can be explained if *x-much* is considered a shunting expression in the sense of McCready 2010. To support this analysis, though, we first need to demonstrate that the *x-much* construction has the conversational force of expressives more generally.

3 The conversational force of *x-much*

Just as we have shown that *x-much* has a different syntactic distribution than *much* in other constructions, we can also demonstrate that *x-much* can only appear in clauses with expressive force, that is, clauses whose entire content lies outside the at-issue truth-conditional dimension. This is different from *much* in all other constructions it occurs in, including the VP-*much* construction, which show no such restriction. For this reason, we come to treat *x-much* itself in Section 5 as an expressive operator, which takes at-issue content and shunts it to the expressive domain.

3.1 Second and third person targets

To make this argument, we will consider how the *x-much* construction behaves in discourse. To begin then it will be helpful to consider how the *x-much* construction involves conversational participants. Examples (19)-(20) show that while the subject of the *x-much* predication can be the addressee it need not be. The most plausible interpretation of (20) is that Bill is overly angry, while in (19) the address is.[10]

(19) A: I %&#% hate John.
B: Angry, much?
A: Oh shut up.

(20) A: Bill was like "I %&#% hate John."
B: Angry, much?
A: I know right.

10 We have noted that when the address is the subject of the *x-much* predication, the conversation often becomes confrontational, while when we have a third person subject, the conversations have a commiserating feel. We discuss why this might be the case in Section6.

We point this out because in the data below we often switch back and forth between third person and second person subjects in order to construct plausible examples – e.g., asking a question about yourself often involves more complex contexts than asking about a third person.

3.2 An *x-much* utterance is no (elliptical) question

While we ultimately come to a expressive account of *x-much*, at first pass, one might think that *x-much* constructions are some sort of grammaticalized elliptical question. The reason is that uses of *x-much* in the wild often almost always occur with a question mark. This analysis would say that the two examples in (21) are equivalent, modulo ellipsis. More pointedly, the *x-much* construction would simply be an elliptical version of a VP-*much* sentence. [11]

(21) a. Angry, much? b. Are you angry much?

While tempting, this analysis cannot work. First, note that unlike true questions, the *x-much* construction is not genuinely answer-seeking. We can see this from the behavior of *x-much* with respect to polarity particles in the answer.

(22) A: Are you angry much?
B: No. / Yes.

(23) A: Angry, much?
B: #No. / #Yes.

Polar questions canonically expect a polarity particle response. The fact that the discourse in (23) is infelicitous shows that *x-much* must not be able to raise issues in the same way that a polar question does. The question mark is then misleading.

Furthermore, previous work on response particles (e.g., Farkas & Bruce 2009), and especially in their use as reactions to sentences with appositives (e.g. AnderBois, Brasoveanu & Henderson 2013), has shown that bare polarity particles, especially the negative one, can also be used to react to at-issue assertions, such as in (24).

(24) A: John's pretty angry. B: No.

11 Note that we have further syntactic and semantic arguments in Sections 2 and 4 against treating the *x-much* construction as an elliptical VP-*much* construction. In particular, note that (21a) can covey that the addressee is extremely angry while (21b) can only mean they are often angry.

3.3 An *x-much* utterance is no assertion

The fact that (23) is blanket infelicitous also then suggests that *x-much* does not make an at-issue assertion. This is further supported by the fact that it clearly cannot be used to provide an answer to an explicit question, unlike an assertion of intuitively similar propositional content.

(25) A: What's up with Harry?
B: [Pointing at Harry:] # Angry, much?

(26) A: What's up with Harry?
B: [Pointing at Harry:] He's super angry.

3.4 An *x-much* utterance is no rhetorical question

While neither an answer-seeking question nor an assertion, perhaps *x-much* has a different discourse status, for instance, an obligatory rhetorical question – i.e., a non-answer-seeking question. There are at least two arguments that this cannot be the case. First, Sadock (1971) shows that rhetorical questions can be modified by expressions like *after all*, while bona fide answer-seeking questions cannot be. The following example shows that *x-much* resists modification by such modifiers.

(27) You and the addressee both know that John has a quick temper. Furthermore, the addressee has just related a story about John flying off the handle.
a. Figures. After all, isn't John angry all the time?
b. Figures. #After all, angry, much?

A second test is that NPIs are only appropriate in rhetorical questions, not ordinary questions (Caponigro & Sprouse 2007). This is demonstrated by the contrast between (28) and (29). Example (30) shows that *x-much*, which we already know does not form an ordinary question, also rejects NPIs. [12] [13]

12 Note that the reading we are looking for in (30) has the speaker accusing the some individual of working excessively or caring excessively, which puts it on par with the other kinds of examples discussed here.

13 It is perhaps surprising to say that the *x-much* construction rejects NPIs given that *much* is often taken to be an NPI. While this is true, there is additional evidence that *x-much* is just not an NPI. If *x-much* were an NPI, we should expect it to occur with the NPI expression in pairs like *any~no*. In fact, we always find *x-much* appearing with the expression that is not an NPI. For instance, we have many attested examples like *no class, much?*, but we never see *#any class, much?*, which is what we would expect if *x-much* were not an NPI.

(28) a. After all, did John really give a damn?
b. After all, did you even lift a finger?

(29) a. I'm really curious. #Did John really give a damn?
b. I'm really curious. #Did you even lift a finger?

(30) a. #Lift a finger, much?
b. #Give a damn, much?

A final test separating *x-much* utterances from rhetorical question is their behavior with respect mirative markers like *wow*. Because rhetorical questions require their answer to be known, they cannot be prefaced with a genuine indication of surprise. Compare the rhetorical question in (32) with the bona fide question in (31).

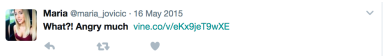
(31) A: John was late to work again.
B: (# Wow!) Isn't he like that.

(32) A: John was late to work.
B: (Wow!) Is he like that?

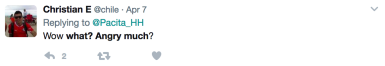
In contrast to rhetorical questions, *x-much* utterances felicitously occur with mirative markers, and in fact, commonly do so in natural examples.

(33) **wow! Angry much?** Where did that come from? I never said anything to warrant that one ::thinking face emoji::

(34) What?! Angry much



(35) Wow what? Angry much?



These facts are challenging for an account that tries to reduce the *x-much* construction to a kind of grammaticalized rhetorical question, but are consistent with the expressive account we propose now.

3.5 An *x-much* utterance is an expressive speech act

Having ruled out treating the *x-much* construction as an assertion or question, we come to our positive proposal, which is that *x-much* forms an

expressive (Potts 2005). In particular, the use of an *x-much* construction makes a not-at-issue contribution that a salient individual has the property in question. This is not its only contribution, though. It additionally conveys an evaluative attitude about this fact. At first pass we might want to assimilate it to what we see in other degree-based expressive constructions like exclamatives, but we think *x-much* construction coveys a slightly different expressive attitude. Note that while an exclamative like *How angry you are!* expresses that the addressee greatly exceeds that standard for angriness, just like *Angry, much?!* can, the latter coveys an extra bit of wryness or playfulness that the former doesn't. While it is hard to pinpoint the quality of this evaluative attitude, we propose that it is something akin to "humorous" or "ridiculous" – that is, the the degree the target possesses on the relevant scale exceeds it in a funny or absurd amount, depending on the context. In most cases, this comes down to the expression of a negative judgment, which accords with native-speaker intuitions about its use. That said, we cannot treat *x-much* as uniformly expressing a negative evaluative attitude. We find naturally occurring examples used positively in a playful way.

In this first example, for instance, the girls clearly do not have swag (namely style and brash confidence). The author of the post is making a joke about how her and a friend used to look in an old photo of them together. We can identify this example as a joke because, like many such examples, it is accompanied by the "laugh until crying" emoji. The example in (37) is an even more clearly ironic use of *x-much*. The author does not mean to claim that the subject of the photo, a second person who is tagged, is cool and has style. In fact, he clearly does not.

(36) Swag much??

(37) Um swag much

While used ironically, these example do not seem to express a negative attitude. Instead, the evaluative attitude expressed is that the fact of the matter is somehow ridiculous. Our proposal is meant to capture these joc-

ular uses, as well as the more common cases where the speaker coveys a negative judgment by expressing the ridiculousness of some individual standing out so thoroughly on the relevant scale.

4 Semantic properties of *x-much*

Section 2, which focused on the syntax of *x-much*, showed that it has a disjoint distribution from *much* across standard constructions. In this section, we will see similar facts in the domain of semantics. In particular, *x-much* modification permits a disjoint set of readings than *much* across the standard constructions in which it appears. That said, our goal is to keep the lexical semantic of *much* in the *x-much*-construction as close as possible to that which is familiar from standard *much*. We believe that this is possible given the non-technical characterization of the meaning of the *x-much*-construction given in the previous section, namely it is an expressive construction, one that conveys an evaluative attitude about the degree to which an individual stands out on a measure provide by the expression it modifies. Modulo the expressive aspect, this seems akin to recent accounts of *much* in which it is a scalar modifier, applying to a scale, or set of degrees, and asserting that the scale has a particular measure (Rett 2016; Solt 2015). The following section will provide a formal proposal that extends this semantics of *much* to the *x-much* construction. Before that, though, this section looks again at the empirical lay of the land.

4.1 X-much as a verbal modifier

We start with comparing the range of readings for *x-much* and *much* as a VP-modifier. VP-*much* can have a variety of norm-related readings depending on the scale that can be constructed from the context and lexical content of the VP. [14] The default reading of VP-*much* concerns frequency scales, as in in (38) and (39). The most natural reading of (39), for instance, is as a question about whether the addressee comes around often. It is norm-related because a positive answer would commit the respondent to coming around more often than the contextually specified standard.

(38) Do you come around here much?

(39) Bill doesn't dance much.

14 We use *norm-related*, following Bierwisch 1989, to speak of readings that make reference to a degree on a scale that exceeds a contextually specified standard.

While frequency is the most easily accessible scale, others are possible depending on the lexical content in the VP. For instance, (40) has a norm-related reading concerning a measure of resemblance, while (41) has a norm-related reading concerning a measure of slippage (in addition to a possible frequency-based reading).

(40) Does Erica resemble Caitlin much?

(41) The rope didn't slip much.

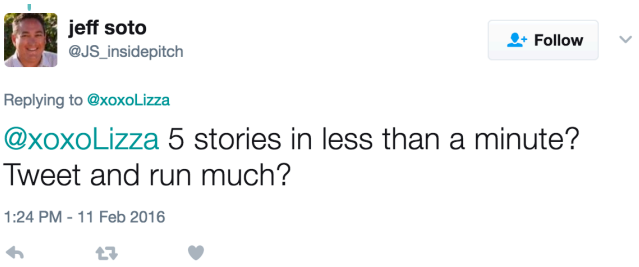
We find a same kinds of readings when *x-much* modifies V° and VP expressions. For instance, (12), repeated here, involves a norm-related reading based on the verb resemble, as in (40). Example (44) parallels (41) where the relevant scale orders amounts of slippage.

(42) The funniest part of this brilliant Burning Man parody ad is them threating to sue over it. **Resemble much?**

(43) Yay gendered shaming language now. **Mask slipping much?**

In addition to these examples, we also see frequency scales with *x-much*. Consider the following example were the context clearly shows that we have norm-related frequency reading.

(44) 5 stories in less than a minute? **Tweet and run much?**



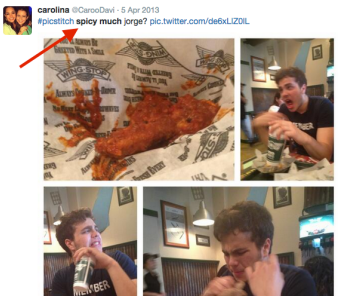
4.2 X-much as an adjectival modifier

While we see similar range of readings for VP-*much* and *x-much* when modifying verbal expressions, things begin to pull apart when we consider other kinds of expressions. A clear case are adjectives, which *x-much* can modify with a norm-related reading. The following examples from twit-

ter contain pictures that display that Harry's cousin and the chicken wings truly do stand out on the lexically given scales, namely height and spiciness.

(45) **chicken wings** @sarcasticwbu · 27 Apr 2012
wow **tall much?** RT @CalmYourCarrots: Harry's cousin makes Niall look like a real life leprechaun… pic.twitter.com/Yo2gLW6t

(46) **caroline** @CarooDavi · 5 Apr 2013
#picstitch **spicy much** jorge? pic.twitter.com/de6xLIZoIL



The fact that *x-much* can directly modify simple adjectives to generate norm-related readings is surprising because this is not possible with *much* in standard constructions, though other degree modifiers like *very* are perfectly acceptable. [15]

(47) Harry's cousin is # much / very tall.

(48) Those wings are # much / very spicy.

Note that we cannot try to eliminate this peculiarity of *x-much* by saying that examples like (45) and (46) involve a predicative adjective with *x-much* modifying the VP containing the adjective. The problem is that while *much* can occur in this configuration, the only available norm-related reading the frequency-based one. That is, the following equalities do not hold and the sentences with *much*-modification are nearly infelicitous given

15 The one exception is so-called *much*-support (Bresnan 1973; Corver 1997; Solt 2010, among others).

that the frequency reading is not particularly plausible.

(49) Is Harry's cousin tall much? ≠ Is Harry's cousin very tall?

(50) That wing wasn't spicy much. ≠ That wing wasn't very spicy.

The fact that *x-much* permits norm-related readings with simple adjectives already makes it distinct from *much* in standard constructions. The asymmetries go even deeper, though, because while *much* can modify comparative adjectives and excessives with norm-related readings, *x-much* cannot. For instance, while *much* can support a norm-related reading in (51a) in which an individual exceeds the speaker height by contextually specified degree, the *x-much* version in (52a) is not possible.

(51) a. He is much taller (than me).
b. He is much too tall.

(52) a. *taller (than me) much?!
b. *too tall much?!

This is the core way that *x-much* is semantically distinct from *much* as normally understood.

4.3 X-*much* as a nominal modifier

We have seen that in the verbal domain *x-much* supports a similar range of readings that standard much does, while in the adjective domain, the range of readings is disjoint – *x-much* license norm-related readings with plain adjectives, but does not allow for differential readings with comparatives and excessives. In the nominal domain we see that *x-much* has a wider semantic distribution that *much* in standard constructions. Consider the following examples that illustrate the availability of norm-related readings based on quantity scales, belied by the fact that it is the large amount of guitars and wine respectively that prompt the use of the *x-much* construction.

(53) Guitars much?

(54) Wine much?

Note here that *x-much* actually shares this species of norm-related reading with prenominal *much*, though only with mass nouns. In the case of count nouns, we see *many* pre-nominally, which it often taken to be an allomorph of *much*.

(55) Did you drink much wine?

(56) Did you play many / *much guitars?

As before, we cannot analyze examples like (53) and (54) as elliptical copular clauses with VP-*much* because VP-*much* does not allow such readings, as shown by the following inequalities.

(57) a. Were there guitars much? ≠ Were there many guitars?
b. There wasn't wine much. ≠ There wasn't much wine.

The fact that *x-much* has norm-related quantity readings with count nouns as in (53), while *much* usally cannot appear in such environments (e.g.,

(56) and (57)), shows once again that *x-much* construction is a unique construction and cannot be easily treated as an extension of one of the other constructions in which *much* standardly occurs.

While *x-much* has both a unique syntactic distribution and licenses a unique class of readings in those syntactic contexts, the fact is that all the readings we see with *x-much* are norm-related. Thus, the lexical semantics of *x-much* looks identical to *much* across the more familiar constructions in which it occurs. In the formal account that we develop below respects that. We want account for that fact that *x-much* generates similar norm-related readings as standard *much*, while accounting for the fact that the availability of such readings is slightly different – e.g., with simple adjectives and count nouns, but not, for instance, comparative adjectives or excessives. Furthermore, our analysis must account for the fact that the *x-much* construction has expressive conversational force.

5 Formal proposal

In order to account for the observed properties of *x-much*, we assume a multidimensional semantics in the Pottsean tradition (Potts 2005). In particular, our analysis is based on the idea of *hybrid semantics* in Gutzmann 2015b, that is, a multidimensional semantics in which the ordinary truth-conditional layer of meaning is supplemented with an additional meaning dimension that captures the *use-conditional* meaning of an utterance.[16] This use-conditional tier does not only feature expressive content in the narrow sense – as contributed by, say, expressive adjectives, slurs, or interjections – but also other aspects like the discourse-functional meaning of various particles (Gutzmann 2013; McCready & Takahashi 2013), vocatives (Eckardt 2014; Predelli 2008), sentential force (Gutzmann 2015b; Portner 2007), or even the giveness of backgrounded material (Kratzer 2004).[17]

16 Alternatives to the framework in the Pottsean tradition are suggested, amongst others, by Barker, Bernardi & Shan 2010, Gutzmann 2015a, and Kubota & Uegaki 2011, who use continuations, or Giorgolo & Asudeh 2011, 2012, who use an approach based on the application of monads to natural language (Shan 2001).

17 In contrast to Potts's second dimension that focused on his notion of *conventional implicatures*, the use-conditional dimension does not include appositives or other supplements, for which a use-conditional analysis seems inadequate. Cf., amongst many others, Amaral, Roberts & Smith 2007; AnderBois, Brasoveanu & Henderson 2013; Koev 2013; Nouwen 2007; Schlenker 2010; Syrett & Koev 2014 for some discussion.

5.1 Combining truth- and use-conditions

To illustrate the core idea of hybrid semantics, consider an utterance of the following sentence, which contains the expressive attributive adjective *damn*.

(58) That **damn** Parker got the best shot of Spiderman.

The idea of a multidimensional approach to use-conditional content, and hybrid semantics in particular, is that the meaning of an utterance like (58) must be captured by both its truth-conditional content and the use-conditions contributed by the expressive adjective.

(59) TC: »That **damn** Parker got the best shot of Spiderman« is **true**, iff Parker got the best shot of Spiderman.
UC: »That **damn** Parker got the best shot of Spiderman« is **felicitously used**, iff the speaker has a negative attitude towards parker.

While the truth-conditional content of a sentence is traditionally understood as a set of possible worlds (namely those worlds in which the truth-conditional content of the sentence holds), we will render the use-conditional content as a set of the contexts in which the sentence is uttered felicitously (Gutzmann 2015b).[18]

Only taken together, are the two meaning dimensions able to capture the entire conventional meaning of (59), as neither the truth-conditional dimension nor the use-conditional one are sufficient on their own. This is the basic idea of hybrids semantics, which goes back at least to Kaplan's (1999) influential manuscript, and it is rather independent of how it is actually formulated. However, the multidimensional type-based system pioneered by Potts (2005), provides a natural formalization of hybrid semantics and sparked a lot of subsequent work that extended and modified Potts's original system. However, since, as we already have shown, the interaction of *x-much* with other expressions is not that rich, we will use an informal fraction-like tower notation (Gutzmann 2013) and write the use-conditions on top of the truth-conditional content in the following way, while saving the formal details for the appendix.

(60) expression $e = \frac{\text{use-conditional content of } e}{\text{truth-conditional content of } e}$

18 See also Predelli (2013) for a similar way to think of use-conditional content.

5.2 Expletive functional expressives

Let us apply this notation to a possible utterance of (58). The crucial observation here is that the use of *damn* does not contribute to the truth-conditions of the sentence. That is, whenever (58) is true, the following minimal variant in which *damn* (together with the demonstrative article) is dropped is also true and vice versa.

(61) Parker got the best shot of Spiderman.

While the truth-conditions of (61) and (58) are the same, the presence of *damn* in (58) is of course not without any effect. Its use displays a negative attitude of the speaker towards Parker.[19] Using a maybe somewhat simplifying paraphrase for a simple paraphrase for *damn*, we can give the truth-conditional and use-conditional content of (58) as follows.

(62) That **damn** Parker got the best shot of Spiderman.

$$= \frac{\textit{The speaker has a negative attitude towards Parker}}{\textit{Parker got the best shot of Spiderman}}$$

The way the expressive adjective in (58) composes with the rest of the sentence is one of many ways in which expressives or use-conditional items in general can interact with other content. Using the terminology introduced in Gutzmann (2013, 2015b), *damn* is an expletive, functional expressive Cruse 1986: see also. It is expletive in so far as it can be removed from a sentence without altering the *truth-conditional* content of the sentence. That is, as discussed above, the truth-conditional content of (58) and (61) is the same.[20] In addition to being expletives, expressive adjectives like *damn* are *functional* insofar as they need an argument in order to express full use-conditions. In (58), *damn* applies to *Parker* in order to express a negative speaker attitude towards Peter Parker.[21] The way functional expletives compose with their argument can be summarized in the following schematic illustration, where $S[\ldots\varepsilon(\alpha)\ldots]$ is an Expression S that contains an expressive ε that takes α has its argument (Gutzmann 2013).

19 Alternatively, the negative attitude of *damn* can target the entire proposition that Parker got the best shot of Spiderman. See Frazier, Dillon & Clifton 2014; Gutzmann in prep. on this phenomenon.

20 The use-conditional content is of course effected by the presence or absence of *damn* and thus (58) and (61) have different use-conditions.

21 Combining these two features leads to the fact that expletive functional expressive are »non-resource-sensitive«, which means that they do not »consume« their argument, but instead give it back for further composition. That is, the argument of a functional expletive can be used at least twice (once in the use-conditional tier, and a second time when it is used truth-conditionally).

(63)

$$S[\ldots\varepsilon(\alpha)\ldots] = \frac{\varepsilon(\alpha)}{S[\ldots\alpha\ldots]}$$

5.3 Shunting expressives

In the original work by Potts (2005), functional expletives were assumed to be the only kind of expressives and the composition schema in (63) was the only way in which expressives can be composed in Potts's formal framework. This view has been shown to be too restrictive (Gutzmann 2011; McCready 2010), as there are expressive items that do not work as illustrated in (63). Of particular interest for the purposes of this paper are are so-called »shunting« expressives first studied by McCready (2010). What is special about these can best be described with reference to how they differ from expressives like *damn* in (58). Instead of passing back their argument to the truth-conditional dimension (α appears unmodified at the bottom level in (63)), what these expression are doing is to »shunt« their truth-conditional argument away to the use-conditional dimension in a resource sensitive fashion, leaving nothing back in the truth-conditional layer. For instance, McCready (2010: § 3.3) discusses the Japanese expression *yokumo*. When used in a declarative, this adverbs transforms an ordinary assertion into a kind of negative exclamative.

(64) Yokumo Dallas to kekkon shita na!
yokumo Dallas with marry did PT
›He did an amazingly stupid and shocking thing by marrying Dallas!‹

(Japanese; McCready 2010: 40)

It does this by taking the propositional content as its argument, returning a negative attitude towards it, together with a display of surprise at the use-conditional dimension. Crucially, it does not pass anything back to the truth-conditional layer so that it will be left empty. We can state this informally as follows.

(65) yokomu **S** = $\frac{\textit{The speaker thinks } \boldsymbol{S} \textit{ is bad and is surprised by } \boldsymbol{S}}{\varnothing}$

In analogy to (63), we can construe the following composition schema for such shunting expressives.[22]

22 In Gutzmann 2013, a more general scheme is used that in principle allows for shunting

(66)

$$\varepsilon(S) = \frac{\varepsilon(S)}{\varnothing}$$

That is, applying a shunting expressive to a sentence *yokumo* does not leave anything meaningful behind in the truth-conditional dimension. Accordingly, a *yokumo* sentence cannot be used to make an assertion as it lack the necessary propositional content; it rather performs an expressive speech act.

5.4 *X-much* is a shunting expressive

What we sketched about *yokomo* and shunting expressives brings us back to our main topic, as it seems to be very similar to what happens when *x-much* is applied to its target phrase.

(67) Rude, much? = $\frac{\textbf{xmuch}(\textbf{rude})}{\varnothing}$

Analyzing *x-much* as a shunting expressive correctly captures the fact that once *x-much* is applied to its target, the entire construction cannot compose with truth-conditional operators like negation, conjunction or disjunction, as no meaningful truth-conditional content is left behind after *x-much* is applied to its argument. Therefore, an operator like negation, that arguably only as truth-conditional content and can only search for its argument in the truth-conditional dimension, cannot find its argument and the composition cannot proceed. Schematically, this can be depicted as in (68b).

(68) a. *Not rude, much?

b. $\frac{\varnothing}{\textbf{not}}\ \frac{\textbf{rude}(\textbf{much})}{\varnothing}$

In addition, the shunting analysis also captures the fact that the entire contribution of the *x-much*-construction is in the use-conditional dimension and that it therefore is not asserted, while still committing the speaker to its content.

expressives to occur in larger expressions.

$$S[\ldots\varepsilon(\alpha)\ldots] = \frac{\varepsilon(\alpha)}{S}$$

However, all the shunting expressions studied so far apply to the entire sentence and hence it could be the case that empirically the more restrictive schema in (66) is sufficient.

5.5 Lexical semantics *x-much*

As for the concrete lexical semantics for *x-much*, our goal is to assimilate it to standard *much* to the greatest extent possible. Along these lines, we follow two recent unified accounts of *much*, namely Rett 2014; Solt 2015, in which *much* is a predicate (or modifier).[23] In a norm-related environment, the result is the schema in (69).

(69) **much(D)** is true in a context *c* just in case $max(\mathbf{D})$ exceeds the contextual standard for **D** in *c*

Thus, if we take a bare adjective, like *rude* to denote a relation between individuals and degrees, then after its individual argument is satisfied, it will denote a predicate of degrees like (70) – the canonical object to which *much* can apply, as shown in (71). Note that we follow, for example Rett 2008b, in assuming that adjectives compose with their individual argument first to produce a degree predicate.

(70) $[\![$**rude(x)**$]\!]$ = the set of degrees of rudeness *x* possesses.

(71) $[\![$**much(rude(x))**$]\!]$ is true in context *c* just in case $max(\mathbf{rude}(\mathbf{x}))$ (the maximal degree of rudeness *x* possesses) exceeds the contextual standard for rudeness in *c*.

We take this analysis of standard *much* wholesale and apply it to *x-much* with two modifications. First, *x-much* unlike standard *much* is always norm-related, which we build into the lexical semantics of the former by requiring the maximum degree of the scale argument to exceed the contextual standard.[24] Second, recall that *x-much* not only conveys that some individual has the property in question, but also a speaker attitude about that fact. We also trivially alter (71) so that it denotes sets of contexts, which we need for our expressive semantics. Because the *x-much* construction does not allow an overt subject, we assume, as shown in (73), that a free vari-

23 While Rett 2014 and Solt 2015 both treat *much* as taking degree predicate argument, they differ in terms of whether they are degree modifiers with the standard introduced explicitly or degree predicates with the standard introduced pragmatically. We take the latter approach, but there is nothing about our account that is inconsistent with the other view.

24 Instead of lexicalizing this, we could instead give *x-much* a non-norm-related semantics and then require it to compose with an exclamative illocutionary force operator. Rett 2008a shows that exclamatives must have a norm-related degree reading and proposes an operator E-force to enforce this requirement. We cannot borrow E-force directly because *x-much* does not have other properties of excalamatives like mirativity, instead expressing ridicule or laughability, but in future work it would interesting to explore the cross-construction requirement that expressives have norm-related readings.

able resolved by context determines what the expression *x-much* modifies is predicated of.

(72) $[\![\textbf{xmuch(D)}]\!] = \{c : \text{such } max(\mathbf{D}) \text{ exceeds the contextual standard for } \mathbf{D} \text{ in } c \text{ and } c_S \text{ (the speaker) thinks the difference between } max(\mathbf{D}) \text{ and the contextual standard to be ridiculously large.}\}$

(73) *Rude, much?*
$[\![\textbf{xmuch}(\textbf{rude(x)})]\!] = \{c : \text{such that } max(\mathbf{rude}(\mathbf{x})) \text{ (the maximal degree of rudeness of the contextually specified individual } x) \text{ exceeds the contextual standard for } \textbf{rudeness} \text{ in } c \text{ and the speaker thinks the difference between } max(\textbf{rude(x)}) \text{ and the contextual standard to be ridiculously large.}\}$

(73) thus says that the use of *x-much* is felicitous – or, as Kaplan (1999) put it, »expressively correct« – if the inferred referent exhibits the gradable property to a degree that exceeds the standard of comparison, which is the normal contribution of *much*, and if the speaker judges the amount the standard is exceeded to be ridiculous. This approximately captures the contribution of *x-much*.

5.6 Accounting for the distribution

While the semantics we give to *x-much* closely parallels that of standard *much*, in doing so, we have yet to account for those distributional differences between *x-much* and standard *much*. In particular, why is the former acceptable with bare gradable predicates, but not comparatives or excessives, while the latter has the opposite pattern? We believe the answer can be attributed to morphosyntactic facts about the *x-much* construction. In particular, the disjoint, but partially overlapping distribution of *x-much* and standard *much* detailed in Sections 2 and 4 can be entirely explained by assuming that a bare DegP is banned in the syntactic fragment to which *x-much* applies. More formally, the configuration in (74) is ungrammatical.

(74) $*[[_{DegP} \ldots] much]$

The exact source of this ungrammaticality is unclear, but it appears to be a general fact about the *x-much* construction that we are restricted to lexical categories or their projections. Recall that Section 2 shows that *x-much* can modify lexical N and V heads, in addition to PPs, NPs, and VPs. But crucially, *x-much* cannot target functional projection like DPs, TPs, or CPs.

(75) a. *The cliché, much?
b. *The birds of a feather, much?

(76) a. *Presumes, much?
b. *Presumed, much?

(77) a. *You are angry, much?
b. *That you are angry, much?

If this is indeed a general constraint on the target of *x-much*, we can rule out (74) as well, since DegP can also be classified as a functional projection. Once (74) is ruled out, though, we predict the distribution of observed *x-much* in comparison to standard *much*.

To begin, we account for the fact that while standard *much* is grammatical in concert with other degree constructions, like comparatives or excessives, *x-much* is ungrammatical. This is due to the fact that these constructions all involve Deg-heads, which we have ruled out in the *x-much* construction for syntactic reasons. We believe this syntactic explanation is preferred to any semantic alternative. The reason is that expressions like *too tall* or *ruder than me* should denote degree predicates – exactly the kind of expression that *x-much* composes with. Moreover, we know that *x-much* can compose with expression that have a differential semantics as long as they do not involve a Deg-head. Consider example (15), whose PP argument involves a set of differential degrees, namely the set of all degree some x is related to minus the limit. It is this object that *x-much* modifies, but it is semantically identical to a comparative or excessive. Thus, we think it is correct to rule out the later on morphosyntactic grounds.

Once we have concluded that DegP cannot occur in an *x-much* construction, the fact that *x-much* can modify bare gradable adjectives is immediately explained. Solt 2015 shows that standard *much*, due to a blocking effect, is banned in construction where a bare DegP is allowed, and can otherwise appear. Normal adjectives allow DegPs (e.g., *John is very tall*), which is why standard *much* cannot appear in sentences like **John is much tall*. If the *x-much* construction independently bans DegPs, then the blocking effect should not apply and we correctly predict that bare adjectives should appear in the *x-much* construction. This accounts for the second way that *x-much* and standard *much* are different.

Finally, we noted that beside these two wrinkles, *x-much* and standard *much* have similar distributions. They both can modify NPs, VPs, and PPs. This is due to the fact that, as has been noted since Cresswell 1976, nouns and other expressions can alternate with a degree denotation. For instance,

Solt 2015 argues that when standard *much* applies what we might think of a non-degree-denoting expression, a measure function like (78) has intervened, which takes an entity and returns a predicate of degree based on some contextually specified measure μ that can apply to those entities.

(78) $[\![Meas]\!] = \lambda x \lambda d.\mu(x) \geq d$

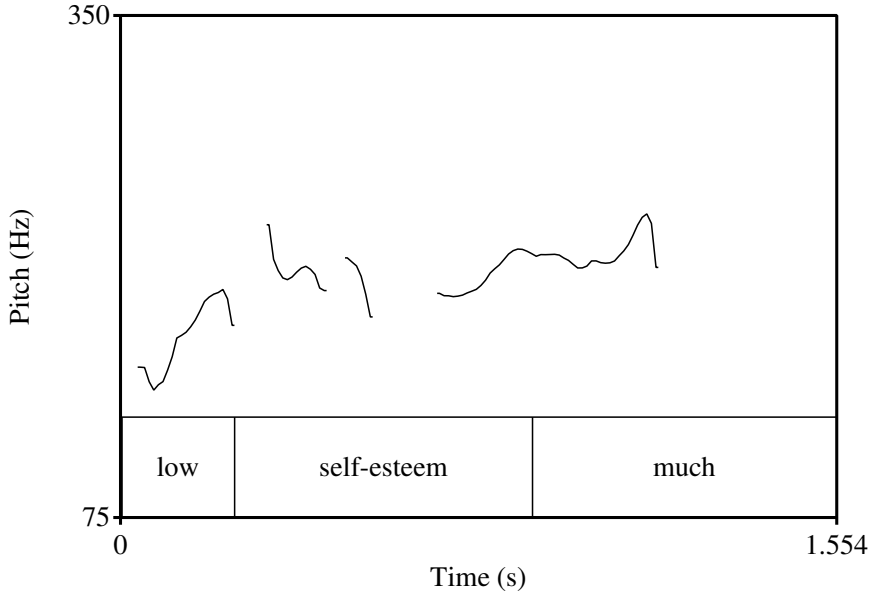
Given that measure functions have a wide distribution, return a predicate of degrees, and are not Deg-heads, we predict that we should find *x-much* modifying a wide variety of expressions just like standard *much*.

In sum, this section has shown how we can account for the meaning and distribution of *x-much* by combining two strands of recent work. On one hand, we have argued that the core lexical semantics of *x-much* does not differ substantively from accounts of standard *much*. It is a predicate of degrees that tests whether the maximum degree in that predicate exceeds the contextual standard. Where *x-much* is different from standard *much* is that it is at the same time a shunting operator. It takes the familiar predicate of degree denoted by standard *much* and applies it in the use-conditional domain instead of the truth conditional domain. This is what explains the unique behavior of the *x-much* construction in discourse and the fact that it cannot be embedded. In the next section we consider a final aspect of the *x-much* construction, namely the fact that it bears rising intonation, which affects its behavior in discourse over and above the the fact that it is a shunting operator.

6 Directedness and discourse status

One aspect of the *x-much* construction that we have not addressed so far is why, when written, it is used with a question mark. The answer is intimately related to the discourse properties of *x-much*. More specifically, we believe that the orthographic question mark indicates the rising intonation that accompanies *x-much* utterances, which is illustrated by the spectrogram in (79) for a naturally occurring example. Note that there is 100hz rise over the course of the utterance, with a pronounced rapid rise on *x-much* itself.

(79) Low self esteem, much?[25]



While it would be ideal if we could derive a requirement for rising intonation from either the lexical semantics of *x-much* or the fact that it is a shunting operator, we do not believe this is possible. Previously identified shunters, like *yokumo* in Japanese, have no such requirement and standard *much* does not necessarily bare such intonation.[26] We are forced, then, to say that rising intonation is just a grammaticalized aspect of the *x-much* construction. This is not so surprising given that the construction has various idiosyncratic properties. That said, once we acknowledge the requirement for rising intonation we can ask whether it has a transparent contribution to the meaning of the construction. In this section we show that it does.

Rising intonation is known to have an important semantic effect by shaping how an utterance updates the context with its content. This is seen most clearly in the well-known case of rising declaratives, which are felicitous in a different range of contexts than their counterparts with falling intonation. While there are a variety of accounts of rising intonation (see,

25 We used a naturally occurring example from the *Imcomparable* podcast, episode 167. The example occurs around 55:45.

26 While we have no synchronic explanation for the obligatory rising intonation there are plausible diachronic explanations. In particular, standard *much*, especially adverbially, has an NPI-like distribution (e.g., Liberman 2010). It is possible that if the *x-much* construction passed through a stage where it was an NPI embedded in a bona fide question licensing its appearance, the concomitant rising intonation could have been reinterpreted as part of the construction.

for example Gunlogson 2003, 2008; Malamud & Stephenson 2015, among others), all agree that rising intonation ensures that the content of an utterance cannot be simply added to the common ground. Against this backdrop, the core intuition underlying our proposal is that whatever rising intonation does in the truth-conditional dimension, this is what it does in the expressive dimension with *x-much*. Fleshing out this intuition, though, means building a novel formal model of how expressive meaning enters the discourse, and then showing that rising intonation can have a similar effect in the expressive domain. The goal of the current section is to build just such an account, and to show that it makes correct empirical predictions about the behavior of *x-much* utterances in discourse.

6.1 Rising intonation in declaratives

Because our analysis allows for a partial unification of rising declarative and *x-much*, it is helpful to start with with the former, whose properties are better understood. We follow closely the analysis of rising declaratives in Gunlogson 2008, but the particulars of our formal implementation are quite different, though not substantively so. Gunlogson's analysis of rising declaratives depends crucially on the structure of the context, which consists of two sets of propositions for each interlocutor. The first is a set of *Discourse Commitments* – roughly those propositions whose truth the interlocutor accepts for the purposes of the conversation. The second is the *Source* set, which is the set of propositions whose truth, for the purposes of the conversation, the interlocutor vouches for. In a normal assertion, the proposition at hand is added to both the speaker's discourse commitments and source set. The idea is that by asserting a proposition the speaker vouches for it's truth, and so of course, a fortiori, the speaker accepts its truth for the purposes of the conversation.

The difference between being a source and being committed, and thus the need to include source sets and discourse commitment sets in the discourse model, can be seen in reactions to assertions. Gunlogson 2008 considers the contrasting behavior of the particles *oh* and *yes* in response to a declarative assertion.

(80) A: John bought a guitar.

a. B: Oh (I didn't know that / # I knew that). # He didn't buy a guitar.

b. B': Yes (# I didn't know that / I knew that). # He didn't buy a guitar.

Both *oh* and *yes* replies commit the second speaker to the proposition expressed by the first, shown by the infelicity of a subsequent assertion to the contrary. That is, both reactions ensure that the proposition at hand becomes a discourse commitment of the speaker. They differ, though, in that *oh* cannot precede an assertion of prior knowledge, while *yes* cannot precede assertion of prior ignorance. This difference suggests that the *yes* response sets the speaker up as independent source, i.e., an interlocutor that vouches for the truth of the proposition, while the *oh* response precludes this. The discourse particles can then be analyzed as follows: Both *oh* and *yes* to add a proposition to a speaker's set of discourse commitments, but distinguishing *yes* by having it also add that proposition to a speaker's source set. A *yes* response should then be infelicitous with a subsequent assertion of prior ignorance because it clearly undermines the speaker's ability to independently vouch for the truth of the proposition.

Having motivated source sets and discourse commitments, we can begin to formalize the notion of a context and discuss the ways information can enter it. Note that we work at a higher conceptual level in this section, but the formal details are presented in detail in Appendix A.

Gunlogson (2008) treats the context as a collection of sets of discourse commitments and source sets for each interlocutor. The *discourse commitments* of an agent x – DC_x – is the set of propositions φ such that "x believes φ" is a mutual belief of every conversational participant (including x). Note that the common ground *CG* is recoverable by taking the intersection of the discourse commitment sets of all the conversational participants. In addition to tracking discourse commitments, the context also tracks the sources of those commitments. That is, the *source set* of an agent x – SS_x – is the set of propositions whose truth is (independently) vouched for by that participant. It makes no sense for an agent to be a source for a proposition without also having that proposition as a discourse commitment. For this reason we assume that contexts are only licit if *SS* is a subset of *DC* for each interlocutor. Thus, the default effect of assertion, which publicly commits the speaker to the proposition as a source, can be formalized as adding the proposition to the *SS* (and *DC*) for the speaker.

We are now in a position to give the analysis of rising intonation in Gunlogson 2008, which will be mirrored in the expressive domain to account for the behavior of *x-much* utterances in discourse. The core proposal is based on the idea of a *contingent discourse move*. A discourse move that has been rendered contingent has its normal affect on the context, but only provisionally. It is only made permanent if some condition satisfied

by the addressee. Thus, contingent discourse moves are inherently interactional. Gunlogson's proposal is that rising intonation renders a discourse move contingent. In the case of a declarative, which is canonically asserted committing the speaker to the proposition at hand, rising intonation transforms it into a *contingent commitment*.

(81) Contingent Commitment (Gunlogson 2008: p. 123, ex. 46)
A discourse move μ committing an agent α to φ as is a *contingent commitment* if:

a. $\beta \neq \alpha$ is implicitly authoritative[27] with respect to φ at the time of μ

b. It is inferable in the discourse context that α's commitment to φ as a source will be withdrawn unless the discourse move immediately succeeding μ has the effect of committing β to φ as a source

We now have Gunglogson's analysis of rising declaratives. Canonically, declaratives are asserted as in (109), adding the denoted proposition to the speaker's discourse commitments, as well as the speaker's source set. Rising intonation on a declarative would then render this move contingent as in (112). In particular, it becomes felicitous only if the addressee is inferable as a source for the proposition at hand, and the speaker is made a source only if the addressee ratifies herself as a source also. The result of a successful update with a rising declarative results in a particularly harmonious context. Both interlocutors end up not only committed to the proposition (which is default effect of a falling declarative), but also marked as a source for that proposition. In this way, rising declaratives can be seen as a tool for seeking total contextual alignment on a proposition. The analysis presented below shows that utterances with *x-much* have the same effect in the expressive dimension. First, though, it is useful to consider a few important predictions about the behavior of rising declarative under Gunlogson's analysis. In doing so, we simultaneously show that *x-much*-utterances behave similarly, which motivates our (partially) unified treatment.

27 An agent is implicitly authoritative with respect to φ if it is inferable from the context that the agent would be a source for φ or $\neg\varphi$ if committed to either. Essentially, it is an expectation about a conversational participant's knowledge state.

6.2 Shared behavior of *x-much*-utterances and rising declaratives

The first observation to be made is that rising declaratives need an interlocutor to which it is directed. You cannot just utter it for yourself. For instance, consider the follow scenario.

(82) [Walking through the forest alone, you come upon what you think might be an old oak.]

a. Is that an oak?
b. #That's an oak?

Obligatory directedness is immediately predicted by the account in Gunlogson 2008. Rising intonation with no addressee makes a declarative self-defeating. It adds a proposition to the speaker's commitment and source sets, only to have it immediately removed because the move was contingent on a condition that could not hold. Though we did not present an analysis of bona fide polar questions, there is no such trouble with making a polar question in isolation. It merely raises the issue of whether φ and marks the speaker as unable to be the source of φ, neither of which needs to be retracted in the absence of an addressee.

Now, turning to *x-much*, we see similar behavior. The *x-much*-utterance in (83a) is ruled in a modified forest context in which there is no addressee.

(83) [Walking through the forest alone, a giant tree crashes down in front of you.]

a. #Scary, much?
b. That was very scary!
c. Scary!
d. How scary that was!

In contrast, using a plain declarative as in (83b) or just elliptical version of it as in (83c) is perfectly fine (*pace* all approaches to think of declaratives as putting forward a proposal). Interestingly, exclamatives, which seem to be very similar to utterances of *x-much*, are also possible in such a context, as witnessed by (83d). This helps pinpoint the problem with (83a) in the rising intonation and its effect on the discourse status of *x-much*, and not just the fact that involves use-conditional content.

A second property of rising declaratives that follows from Gunlogson's account is their infelicity in discourse-initial or contexts that are neutral with respect to the proposition denoted by the declarative. The reason is that rising declaratives seek a future context in which both speaker and

addressee are a source for the proposition at hand, the discourse context when the rising declarative is uttered must support the inference that both speaker and addressee are plausible sources (with the addressee being the superior source). Gunlogson (2008: ex. 9-10) provides the following contrasting examples. In example (84), the addressee, in virtue of being outside can be safely assumed to be a source for a weather-related proposition. In contrast, the speaker in this context is completely uninformed. The rising declarative is predicted to be bad in this context precisely because it (conditionally) commits to speaker to being a joint source with the addressee for the proposition, but in this context, it is mutually discernible by all conversational participants that the speaker cannot be a source.

(84) [Robin is sitting in a windowless computer room with no information about current weather conditions when another person enters from outdoors.] Robin to newcomer:

a. Is it raining?
b. #It's raining?

In contrast, example (85) is not neutral with respect to the relevant proposition. In virtue of the addressee's clothing, the speaker can reasonable conclude that it is raining. The rising declarative is thus a felicitous way for the speaker to establish joint commitment to that fact as a source on par with the addressee.

(85) [Robin is sitting, as before, in a windowless computer room when another person enters. The newcomer is wearing a wet raincoat and boots.] Robin to newcomer:]

a. Is it raining?
b. It's raining?

These examples show that a rising declarative cannot be used when the speaker cannot be construed as a source. We see a similar effect when the addressee cannot be construed as a source. Here the rising declarative contrasts with a falling declarative.

(86) [Robin is sitting with Bill, as before, in a windowless computer room. Robin looks at her phone and sees the weather radar shows a front moving overhead. Bill is lying on the couch doing nothing. She says to him:]

a. It's raining.
b. #It's raining?

This type of example can be made felicitous if Robin is given some reason to believe that Bill could also be a source, as (87) shows.

(87) [Robin is sitting with Bill, as before, in a windowless computer room. Robin looks at her phone and sees the weather radar shows a front moving overhead. Bill is on the computer and Robin can see he's looking at a weather website. She says to him:]

a. It's raining.
b. It's raining?

As before, we see the exact same pattern with *x-much*. In a repetition of the contexts above we see that an *x-much*-utterance is only felicitous when the speaker is a plausible source for the expressive attitude.

(88) [Robin is sitting in a windowless computer room with no information about current weather conditions when another person enters from outdoors.] Robin to newcomer:

a. #Rainy, much?

(89) [Robin is sitting, as before, in a windowless computer room when another person enters. The newcomer is wearing a wet raincoat and boots.] Robin to newcomer:

a. Rainy, much?

Similarly, *x-much* is infelicitous in contexts where the addressee cannot be known to be able to join in as source for the expressive attitude.

(90) [Robin is sitting in a windowless computer room. Bill is sleeping with earplugs in. There is loud rain on the roof, but Bill isn't disturbed. He wakes up later when you can no longer hear the rain.] Robin to Bill:

a. #Rainy, much?

(91) [Robin is sitting in a windowless computer room. Bill is sleeping. There is loud rain on the roof that wakes Bill.] Robin to Bill:]

a. Rainy, much?

These examples show that *x-much*-utterances behave like rising declaratives in that their felicitous use requires that it be inferable that both speaker and addressee could act as a source for the expressive attitude.

6.3 A formal account of rising intonation on expressives

While the behavior of rising declaratives and *x-much* across these sets of tests is parallel, and while we want to reduce these facts to the common contribution of rising intonation, making this analysis explicit requires extending Gunlogson 2008, in particular, the definitions in (109) and (112). Most pressingly, we need to understand what it means for interlocutors to act as a joint source for u-content, which *x-much* utterances traffic in, instead of the vanilla propositions denoted by rising declaratives. We must also make sense of the fact that *x-much*-utterances are not-at-issue, while rising declaratives are. Finally, in a point we take up in detail in Appendix A, we need our formal model of the context to allow for information to enter via multiple dimensions, which is crucial for how composition proceeds in hybrid semantics. Our particular proposal for use-conditional content and how it enters the context has two parts.

First, we propose that use-conditional content can be modeled as sets of contexts – that is, contexts in which the expression's use-conditions are met. For instance, an expression like *oops* is licit only in contexts in which the speaker is committed as source to the proposition that some minor mishap has occurred. Thus, we can treat *oops* as denoting in the use-conditional domain all contexts in which that holds, namely:

$$\{K \mid [\![\text{A minor mishap has occurred}]\!] \in SS^K_\sigma\}$$

In general, all use-conditions are of the form $\{K \mid \varphi \in SS^K_\sigma\}$, where φ is a proposition and σ is the holder of the expressive attitude.

Second, we propose that interlocutors, in addition to their discourse commitments and source sets, also have a set of expressive commitments – *ES* – which is a set of sets of contexts, namely a set of the kinds of objects expressives denote. This allows us to treat expressive updates in a manner parallel to assertions. Just as asserting places a proposition in the speaker's source set and discourse commitments, an expressive update means adding the expressive content to the speaker's *ES* and then altering the context so that it consistent with updated *ES*. In particular, given that use-conditions are sets of contexts $\{K \mid \varphi \in SS^K_\sigma\}$ where the speaker is a source for φ, the effect of adding such a set to a speaker's *ES* is moving to an output context where the speaker is the source for φ.

Note that the resulting context will be the same as that in which φ is asserted, but it arises in a different way. The similarities and differences are both important. First, it is clear that using an expressive commits the speaker as a source for the use-conditions obtaining – that is, saying *Oops!*

commits the speaker as source to the proposition that a mishap has occurred, just as asserting that a mishap has occurred would. The differences, though, are equally important. Most importantly, the proposition that ends up in the speaker's source set is never part of an expression's truth-conditional content. That means, for instance, if response particles like *yes*, *no*, etc. are anaphoric to an expression and act on its truth-conditional dimension, they should be infelicitous reactions to an expression that has only use-conditional content, which is the case, both for *x-much*-utterances and their kin. It is these differences that explain why expressives seem inadequately translated by other means. Asserting that a mishap occurred and saying *Oops!* just feel qualitatively different even though they commit a speaker to the same content. Note that this implies that we do not subscribe to the view that expressive content is ineffable in the sense that you cannot provide exact conditions for it (*pace* Potts 2007). A better way to think of the ineffability property is in terms of Kaplan's (1999) *mode of expression*: even if expressive and truth-conditional content may contain the same information, they convey them in very different ways. This reflected in the system presented here by the differences in how content may affect the source set.

In extending Gunlogson's contexts to handle expressive content, we have mirrored the structure of assertion at a higher level. Each interlocutor is provided with a set to store use-conditional content, and the effect of using an expression with use-conditional content is to union that content with the relevant set. This approach is not accidental, and allows us to treat rising intonation in a perfectly parallel way across meaning dimensions. Just as rising intonation on a declarative makes its assertion contingent (see (112)), rising intonation on an expressive renders its use-conditional effect contingent, as in (117).

(92) A discourse move μ by agent α expressing $\varepsilon = \{K|\varphi \in SS_\alpha\}$ is *contingent* if:

a. $\beta \neq \alpha$ is implicitly authoritative[28] with respect to ε at the time of μ

b. It is inferable in the discourse context that $\varepsilon \cup ES_\alpha$ will be withdrawn unless the discourse move immediately succeeding μ has the effect of $\varepsilon \cup ES_\beta$.

The analysis of the effect of *x-much* on the context is now immediate. The

28 An agent is implicitly authoritative with respect to ε if it is inferable from the context that the agent is explicitly authoritative with respect to φ.

multidimensional denotation of *x-much* is the same as in (73). The default effect of an *x-much*-utterance would be to add its use-conditional content to the speakers expressive set as in (115), but because *x-much* requires rising intonation, this move is rendered contingent as in (117). The analysis, by mirroring Gunlogson's treatment of rising declaratives, immediately captures those properties they share as discussed in (82)-(91), in particular, the fact that *x-much*-utterances are inherently directed, and the fact that their felicitous use requires both speaker and addressee to be possible sources for the proposition that defines the expressive's use-conditions.

Even better, though, the analysis makes further predictions about the behavior of *x-much*-utterances in discourse, some of which distinguish them from rising declaratives, and follow from the fact that *x-much* traffics in use-conditional content. First, we saw that rising declaratives are different from falling declaratives in that they limit possible response particles to those like *yes* or *yeah*, which mark the addressee as a source for the proposition at hand. Responding to *x-much*-utterances with these particles is infelicitous (see (22)-(23)). We argued that this was due to the fact that these response particles are anaphoric to an expression's truth-conditional content, which is absent in the case of *x-much*-utterances. Note, though, that these would be independently ruled out by the fact that, according to our analysis, *x-much*-utterances seek the alignment of expressive attitudes. That is, they seek an immediately following move where the addressee commits to the same expressive content. The prediction, then, is that *x-much*-utterances should actually prefer responses that indicate expressive concord. This is borne out through the behavior of expressions like *I know, right!?* or *Seriously, though!*.

First, consider how these responses behave with respect to exclamatives. Exclamatives like (93) have two aspects to their meaning. It has a truth-conditional component, namely that the pecan pie is tasty. It also has an expressive component, namely that the speaker finds the extent to which the pie is tasty surprising or unexpected.

(93) What a tasty pecan pie!

One can respond to an exclamative with a response particle like *yep* or something larger like *I know*. These responses commit the speaker as source to the proposition exclaimed, just as with a normal assertion. Crucially, though, they do not indicate that the speaker is also surprised about the extent of the tastiness. They are surprise agnostic. In our formal system we would say that these moves do not update the speaker's expressive set with the use-conditional content of the exclamative.

(94) What a tasty pecan pie!
   a. Yep.
   b. (Oh,) I know.

In contrast, responses like *I know, right!?*, with exclamative intonation, or *Seriously, though!*, do indicate that the speaker is also surprised. That is, they indicate agreement with the first speaker, not just in truth-conditional terms, i.e., with respect to the pecan pie's tastiness, but also in expressive terms, i.e., the use of the exclamative is expressively correct in the context.

(95) What a tasty pecan pie!
   a. I know, right!?
   b. Seriously, though!

Since responses like these indicate agreement on the expressive dimension, we expect them to be felicitous responses to an *x-much*-utterance, which we have proposed makes a contingent discourse move that seeks such alignment. The following examples show this to be the case. In fact, these are the most natural responses when the the *x-much*-utterance concerns a third party.

(96) [A man across the street is yelling at a cab as it pulls away.]
   a. A: Angry, much?
   b. B: I know, right!?
   c. B: Seriously, though!

The way the two-step conversation proceeds in (96) is that speaker A uses an *x-much*-utterance, which amounts to placing its use-conditional content on her expressive set. This commits her as source to the proposition that the man is very angry, and ridiculously so. In addition, the rising intonation of *x-much* marks this move as contingent on B also adding this use-conditional content her expressive set. A response like *I know, right?!*, does precisely this. The output context would have both interlocutors sharing the same expressive set. In addition, both would be committed as a source to the proposition that the man was ridiculously angry. These considerations reinforce the core claims both in this section, as well as previous ones. First, *x-much*-utterances have no truth-conditional content and so cannot be responded to with plain polarity particles, as we saw in the previous section. What we have demonstrated here is that they can be responded to with exclamatives, which we independently know commit the speaker as a

source for expressive content. If *x-much*-utterances, in virtue of having rising intonation, seek alignment of expressive attitudes by projecting, then this is precisely what is expected.

6.4 Summary

Rising intonation is not an ancillary property of the *x-much* construction, but key to understanding its behavior in discourse. The semantics of *x-much*, as we have argued, renders *x-much*-utterances devoid of truth-conditional content. This raises the question of how their use-conditional interacts with the common ground, which is usually taken to be the sum of all of the mutual beliefs of the conversational participants, and cast in terms of truth-conditional content. This section has argued for double-layered model of the discourse context, with one layer consisting of sets of sets of propositions, and a second layer consisting of expressive content, which is treated as constraints on the initial layer. Discourse moves update either layer depending on whether the expressions involved have truth-conditional content, use-conditional content, or both. Against this backdrop, we provide an analysis of rising intonation as in Gunlogson 2008, where it renders discourse moves contingent. In the case of a rising declarative, the speaker is made the source for a proposition just in case the addressee makes herself source. In the case of *x-much*, which bears rising intonation, the effect is mirrored in the expressive domain. The speaker attempts to get the addressee to agree that the *x-much*-utterance is use-conditionally correct. This accounts for the behavior of *x-much* in discourse, most importantly, the fact that *x-much*-utterances require an addressee and require the addressee to be a plausible source for the content that makes the use of *x-much* expressively correct. In this way, the *x-much* construction is good tool to seek mutual alignment of expressive attitudes without putting them directly on the discourse table, which explains their use to establish a connection (mostly when used about another person/object) or to accuse the hearer of exaggerating.

7 Conclusion

This work provides the first detailed discussion of English *x-much*, and in doing so, makes a series of novel empirical and theoretical claims. First, we have argued that *x-much* is an expressive operator of the shunting kind, targeting a gradable predicate and adding a speaker's evaluative attitude

about the degree to which an individual stands out on the relevant scale. Second, we have suggested that the rising intonation that necessarily accompanies the construction's use can be assimilated to that which accompanies a rising declarative. In this way, *x-much* might behave like a kind of expressive question seeking alignment of attitudes. While we did not have space to tackle this aspect of the meaning of *x-much* in detail, studying the relation between use-conditional content and the different discourse update types is an understudied area and ripe for subsequent research that we intend to do. Showing, as we have done here, that English has a novel use of *much* that derives inherently directed expressives is a solid first step.

A Formal Appendix

In this appendix, we formalize the core ideas developed in this paper. In the first part, we provide a formal implementation of the core ideas ideas of hybrid semantics sketched in Section 5 that employs use-conditions alongside a truth-conditional component. In the second part, we specify the formal discourse pragmatics discussed in Section 6.

A.1 Hybrid semantics for expressive content

We present a formalization of the idea of hybrid semantics. Even though we analyzed *x-much* as a shunting expressive in the sence of McCready (2010), we will not use his $\mathcal{L}_{+}$. Instead we will employ a the compositional reformulation developed in Gutzmann 2015b. The system of $\mathcal{L}_{\text{TU}}$, as it is called, introduces new types for use-conditional content, much like $\mathcal{L}_{\text{CI}}$ and $\mathcal{L}^{+}_{\text{CI}}$. However, instead of having multiple new types for the various ways expressive content can compose, together with corresponding application and elimination rules, it uses just one new kind of type and a total of two composition rules. It achieves this by switching to a strictly multidimensional system in which every natural language expression is represented by a 3-dimensional logical expression. We will only sketch the main additions that go beyond an ordinray type-driven semantics. For the full details of the formal system, we refer the reader to Gutzmann 2015b. Let us first start with the type definitions.[29]

29 In order to make shunting operators even more definite in emptying the truth-conditional component, following Barker, Bernardi & Shan (2010), we introduce a new type dedicated type ø (reminicent of the empty set) that cannot be the input to any further applications.

(97) **Types.**

a. e, t are basic truth-conditional types for $\mathcal{L}_{\text{TU}}$.
b. u is a basic use-conditional type for $\mathcal{L}_{\text{TU}}$.
c. If τ is a truth-conditional type for $\mathcal{L}_{\text{TU}}$, then $\langle s, \tau\rangle$ and $\langle \tau, \emptyset\rangle$ are truth-conditional types for $\mathcal{L}_{\text{TU}}$.
d. If σ and τ are truth-conditional types for $\mathcal{L}_{\text{TU}}$, then $\langle \sigma, \tau\rangle$ is a truth-conditional type for $\mathcal{L}_{\text{TU}}$.
e. If σ is a type for $\mathcal{L}_{\text{TU}}$ and τ is a use-conditional type for $\mathcal{L}_{\text{TU}}$, then $\langle \sigma, \tau\rangle$ is a use-conditional type for $\mathcal{L}_{\text{TU}}$.
f. The set of all types for $\mathcal{L}_{\text{TU}}$ is the union of all truth-conditional and use-conditional types.

What is new here is type u for use-conditional proposition. The crucial difference to ordinary propositions is that they are set of contexts: namely the set of contexts in which the expression is felicitously used (this will be explicated in the next section). The other new typ is (reminicent of the empty set), which we will prevent any further application, as it is only an output type (following an idea of Barker, Bernardi & Shan 2010). It will only occur on a truth-conditional dummy expression $\top$ which represents empty truth-conditional content and will be needed to model the behavior of shunting expressions. That is, we have the following new interpretations (beyond the standard definitions):[30]

(98) Let W be a set of possible worlds and C be a set of contexts, then:

a. $D_u = \wp(C)$, the powerset of the set of contexts is the domain of type u.
b. $[\![U]\!] = C$
c. $[\![\top]\!] = W$

With the new types we can build multidimensional expressions. In contrast to Potts's system, we employ a tower-like notation to provide the multidimensional semantic representation of an expression.[31]

The two composition rules we will make use of are called multidimensional application and use-conditional elimination, respectively.

30 For now, we just assume that context are Kaplanian context that (at least) involve a speaker, a time, and a world of utterance. This will be ajusted to a more specific notion later in (108) below.

31 This, however, is just a graphical way of presentation. Officially, the towers are just triples. That is, $\langle \alpha, \beta, \gamma\rangle$ is written as $\dfrac{\gamma}{\dfrac{\beta}{\alpha}}$.

(99) **Multidimensional application.**

$$\left(\begin{array}{c}\alpha_3\\ \hline \alpha_2 : \langle \rho, \nu \rangle\\ \hline \alpha_1 : \langle \sigma, \tau \rangle\end{array} \quad \begin{array}{c}\beta_3\\ \hline \beta_2 : \rho\\ \hline \beta_1 : \sigma\end{array}\right) \overset{\text{MA}}{\Longrightarrow} \begin{array}{c}\alpha_3 \odot \beta_3\\ \hline \alpha_2(\beta_2) : \nu\\ \hline \alpha_1(\beta_1) : \tau\end{array}$$

(100) **Use-conditional elimination.**

$$\begin{array}{c}\alpha_3\\ \hline \alpha_2 : u\\ \hline \alpha_1\end{array} \overset{\text{UE}}{\Longrightarrow} \begin{array}{c}\alpha_3 \odot \alpha_2\\ \hline \alpha_1\\ \hline \alpha_1\end{array}$$

Note that in contrast to the informal tower-notation used in the main text, the official towers here involve three level. The bottom level is the *t-dimension* and contains the truth-conditional dimension, whereas the top-most level is the *u-dimension* and contains completely saturated use-conditional content (»use-conditional propositions«, i.e. sets of contexts). What is new is the second dimension, which we call *s-dimension* and which is the place where the truth- and use-conditional content can interact.

So what are the two composition rules doing? The rule for multidimensional application involves pointwise functional application in the first two dimensions and the merging of use-conditional propositions (i.e. expressions of type u) in the third dimension. The use-conditional merger relation $\odot$ intersects two use-conditional propositions:

(101) $[\![\alpha \odot \beta]\!] = [\![\alpha]\!] \cap [\![\beta]\!]$

The rule for use-conditional elimination takes fully saturated use-conditional content from the second dimension and stores it into the third dimension, while repopulating the second dimension with the content from the first dimension.[32]

How these two rules interact is explained the easiest by way of going through a simple example.

(102) That damn Daniel is dancing.

We use the following 3-dimensional representation for the derivation of (102). We ignore the demonstrative article as well as the tense and aspect of the original example.

32 Regarding the role of use-conditional content elimination (UE), note that even if its application is not forced by the system when applicable, in most cases it has to be applied nevertheless in order for the derivation to be possible. The reason why the application of UE is left optional is to allow the system to handle quantification with pejoratives (see Gutzmann & McCready 2016).

(103)
$$\begin{array}{ccc} \textit{damn} & \textit{Daniel} & \textit{is dancing} \\ \wr & \wr & \wr \\ \left(\dfrac{\dfrac{U}{\mathbf{damn} : \langle e, u\rangle}}{I_e}\right. & \left.\dfrac{\dfrac{U}{\mathbf{daniel} : e}}{\mathbf{daniel} : e}\right) & \dfrac{\dfrac{U}{\mathbf{dance} : \langle e, t\rangle}}{\mathbf{dance} : \langle e, t\rangle} \end{array}$$

As usual, I_e is an identity function individual. That is, for every expression α of type e, $[\![I_e(\alpha)]\!] = [\![\alpha]\!]$. The expression U in the third dimension is a dummy expression that corresponds to »empty« use-conditions. It denotes the set of all contexts and hence a trivial use-conditional proposition that is always fulfilled.

With these representations, we can derive the meaning of (102) by a combination of the two combinatoric rules given above.[33]

(104)
$$\left(\left(\dfrac{\dfrac{U}{\mathbf{damn} : \langle e, u\rangle}}{I_e} \quad \dfrac{\dfrac{U}{\mathbf{daniel} : e}}{\mathbf{daniel} : e}\right) \quad \dfrac{\dfrac{U}{\mathbf{dance} : \langle e, t\rangle}}{\mathbf{dance} : \langle e, t\rangle}\right)$$

$$\overset{\text{MA}}{\Longrightarrow} \left(\dfrac{\dfrac{U}{\mathbf{damn}(\mathbf{daniel}) : u}}{\mathbf{daniel} : e} \quad \dfrac{\dfrac{U}{\mathbf{dance} : \langle e, t\rangle}}{\mathbf{dance} : \langle e, t\rangle}\right)$$

$$\overset{\text{UE}}{\Longrightarrow} \left(\dfrac{\dfrac{\mathbf{damn}(\mathbf{daniel}) : u}{\mathbf{daniel} : e}}{\mathbf{daniel} : e} \quad \dfrac{\dfrac{U}{\mathbf{dance} : \langle e, t\rangle}}{\mathbf{dance} : \langle e, t\rangle}\right)$$

$$\overset{\text{MA}}{\Longrightarrow} \dfrac{\dfrac{\mathbf{damn}(\mathbf{daniel}) : u}{\mathbf{dance}(\mathbf{daniel}) : t}}{\mathbf{dance}(\mathbf{daniel}) : t}$$

As is illustrated by this derivation, the role of the second dimension is to store all expression that are relevant for the calculation of use-conditional content, which includes both use-conditional functions as well as potential truth-conditional arguments.

Given the derivation in (104), we can equate the interpretation of (102) with the interpretation of the three dimensions of the derived 3-dimensional expression, where $|\ldots|$ interprets natural language expressions (while $[\![\ldots]\!]$ interprets single dimensions of the semantic representation).[34]

33 Some notes: Since $[\![I_e(\mathbf{daniel})]\!] = [\![\mathbf{daniel}]\!]$, we drop the identity function and just write **daniel** in the derivation. Also, we just write α for $U \odot \alpha$, since $[\![U \odot \alpha]\!] = [\![\alpha]\!]$.

34 We can then use a projection function, to define interpretation functions, that pick up just one dimension, such that $|S|^t = \pi_1|S|$ provides the truth-conditional content and $|S|^u = \pi_3|S|$

(105) $|\textit{That damn Daniel is dancing}| =$
$\langle [\![\mathbf{dance}(\mathbf{daniel}) : t]\!], [\![\mathbf{dance}(\mathbf{daniel}) : t]\!], [\![\mathbf{damn}(\mathbf{daniel}) : u]\!] \rangle$

That is, the truth-conditional content of (102) (in the first dimension) is given by the proposition that Daniels is dancing, while its use-conditions (in the third dimension) is given by the interpretation of **damn**(**daniel**), that is, that the speaker has a negative attitude towards Daniel.

Now, *damn* in (102) is an expletive use-conditional item, which can be witnessed by the fact that it has an identity function in its first dimension (which corresponds to argument type of the function in the second dimension). So, how shall we model shunting types in $\mathcal{L}_{\text{TU}}$? We achieve this introducing a trivial element $\top$ (in analogy to the trivial use-conditional U) of type $\emptyset$ and have the first dimension of a shunting expression map any input onto that trivial state. That is, for *x-much*, which takes degree predicates as its argument, we get the following representation.

(106) $\textit{x-much} \rightsquigarrow \dfrac{U}{\dfrac{\mathbf{xmuch} : \langle\langle d, t\rangle, u\rangle}{\lambda G.\top : \langle\langle d, t\rangle, \emptyset\rangle}}$

With this semantics representation, we can derive a *x-much* construction like (1) by applying *x-much* to a degree-denoting expression and using use-conditional elimination afterwards.

(107) Rude, much?

$$\left(\dfrac{\dfrac{U}{\mathbf{rude}(x) : \langle d, t\rangle}}{\mathbf{rude}(x) : \langle d, t\rangle} \quad \dfrac{\dfrac{U}{\mathbf{xmuch} : \langle\langle d, t\rangle, u\rangle}}{\lambda G.\top : \langle\langle d, t\rangle, \emptyset\rangle}\right) \overset{\text{MA}}{\Longrightarrow} \dfrac{\dfrac{U}{\mathbf{xmuch}(\mathbf{rude}(x)) : u}}{\top : \emptyset}$$

$$\overset{\text{MA}}{\Longrightarrow} \dfrac{\dfrac{\mathbf{xmuch}(\mathbf{rude}(x)) : u}{\top : \emptyset}}{\top : \emptyset}$$

The fact the we end up with $\top : \emptyset$ in first (and second) dimension models the observation that, after *x-much* »shunted« away the truth-conditional content to the (third) use-conditional dimension, there can be no further compositional steps at the truth-conditional dimension.

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the use-conditional content. Likewise, we can use $|S|^s = \pi_2|S|$ for the second dimension.

A.2 Expressive content in discourse

We start by defining simple contexts in the style of Gunlogson (2008), which is given in (108) for a two agent context K.

(108) **Simple contexts.**
A simple context K is an ordered tuple $\langle DC_\alpha, DC_\beta, SS_\alpha, SS_\beta \rangle$, where:
(i) DC_σ is the set of propositions that are discourse commitments of σ,
(ii) SS_σ is the set of propositions that σ is a source for,
(iii) $SS_\sigma \subseteq DC_\sigma$.

The default effect of assertion is defined in (109) as a function $\mathbf{A}$ from a simple context K_i, agent σ, a sentence S, to an output context K_o (where i and o merely flag inputs and outputs respectively). Recall that in Hybrid semantics expressions do not have a single semantic value, but instead denote triples, where the first element is that expression's truth-conditional content. In a vanilla assertion we use the first project function to extra the proposition the sentence denotes in order to add it to the speaker's source set.

(109) **Assertive update.**
$\mathbf{A}(S, \sigma, K_i) = K_o$ iff
(i) $SS_\sigma^{K_o} = SS_\sigma^{K_i} \cup \pi_1([\![S]\!])$
(ii) K_o is otherwise minimally different from K_i.

The notion "minimally different" is given by (110)-(111).

(110) **Similarity.**
P is more similar to R than Q (written $P <^R Q$) just in case $Q \cap R \subset P \cap R$.

(111) **Minimally Different.**
K_o is minimally different from K_i just in case there is no K' such that:
(i) $SS_\sigma^{K'} = SS^{K_{i_\sigma} \cup \pi_1([\![S]\!])}$
(ii) $\Gamma^{K'} <^{\Gamma^{K_i}} \Gamma^{K_o}$ for any other contextual parameter Γ.

We now have Gunglogson's analysis of rising declaratives. Canonically, declaratives are asserted as in (109) resulting in an output context where the speaker is committed to the proposition at hand as source, but rising intontation on a declarative would render this move contingent as in (112).

(112) **Contingent commitment**. (Gunlogson 2008: p. 123, ex. 46)
A discourse move μ committing an agent α to φ as is a *contingent commitment* if:

(i) $\beta \neq \alpha$ is implicitly authoritative[35] with respect to φ at the time of μ

(ii) It is inferable in the discourse context that α's commitment to φ as a source will be withdrawn unless the discourse move immediately succeeding μ has the effect of committing β to φ as a source

We now extend this account to expressives. The first task to is to allow both truth-conditional and use-conditional content to enter the context. Our proposal is to add a second layer to our notion of context that stores the interlocutor's expressive content, which we conceive of as constraints on the kinds of contexts discussed so far—that is, tuples of source sets and discourse commitments for the interlocutors.

(113) **Macrocontext.**
A macrocontex MC (for duologs) is a ordered $\langle K, ES_\alpha, ES_\beta \rangle$ where:

(i) K is a simple context,

(ii) ES_α and ES_β are sets of simple contexts representing the interloctors expressive commitments,

(iii) $K \in \bigcap ES_\alpha \cap \bigcap ES_\beta$.

The way that use-conditional content updates an expressive set is perfectly parallel to the way that truth-conditional content updates an agent's source set / discourse commitments. We take use conditions to be sets of contexts—namely contexts in which an expression with those use conditions can be used.

(114) **Use conditions.**
Use conditions are of the form $\{K | \varphi \in SS^K_\sigma\}$, where φ is a proposition and σ is the holder of the expressive attitude.

Now expressive updates operate just like assertions, but in the expressive domain—note the similarity between (109) and (115), though here we use the third project to extract an expression's use-conditional content.

35 An agent is implicitly authoritative with respect to φ if it is inferable from the context that the agent would be a source for φ or $\neg\varphi$ if commited to either. Essentially, it is an expectation about a conversational participant's knowledge state.

(115) **Expressive update.**
$\mathbf{E}(S, \sigma, MC_i) = MC_o$ iff
a. $ES_\sigma^{MC_o} = ES_\sigma^{MC_i} \cup \pi_3([\![S]\!])$
b. MC_i and MC_o are otherwise minimally different.

The "minimally different" condition over macro-contexts is parallel to what has been proposed before.

(116) **Minimally Different (Macrocontexts).**
MC_i and MC_o are minimally different just in case:
(i) $ES_\sigma^{MC_o} = ES_\sigma^{MC_i} \cup \pi_3([\![S]\!])$,
(ii) there is no MC' such that $\Gamma^{MC'} <^{\Gamma^{MC_i}} \Gamma^{MC_o}$ for any other contextual parameter Γ.

Given that use-conditions are sets of contexts $\{K|\varphi \in SS_\sigma^K\}$ where the speaker is a source for φ, the effect of adding such a set to a speaker's *ES* is moving to an output macrocontext where the speaker is the source for φ. Note that the resulting K-context will be the same as that in which φ is asserted, but it arises in a different way that explains the similarities and differences between asserting and expressing.

Finally, rising intonation behaves in a perfectly parallel way across meaning dimensions. Just as rising intonation on a declarative makes its assertion contingent (see (112)), rising intonation on an expressive renders its use-conditional effect contingent, as in (117).

(117) **Contingent expressive commitment.**
A discourse move μ by agent α expressing $\varepsilon = \{K|\varphi \in SS_\alpha\}$ is *contingent* if:
a. $\beta \neq \alpha$ is implicitly authoritative[36] with respect to ε at the time of μ
b. It is inferable in the discourse context that $\varepsilon \cup ES_\alpha$ will be withdrawn unless the discourse move immediately succeeding μ has the effect of $\varepsilon \cup ES_\beta$.

The analysis of the effect of *x-much* on the context is now immediate and parallel to what we see with rising declaratives. The multidimensional denotation of *x-much* is the same as in (73). The default effect of an *x-much*-utterance would be to add its use-conditional content to the speakers expressive set as in (115), but because *x-much* requires rising intonation, this

36 An agent is implicitly authoritative with respect to ε if it is inferable from the context that the agent is explicitly authoritative with respect to φ.

move is rendered contingent as in (117). The analysis, by mirroring Gunlogson's treatment of rising declaratives, captures those properties they share as discussed in section 6.

References

Adams, Michael. 2003. *Slayer Slang*. Oxford: Oxford University Press.

Amaral, Patricia, Craige Roberts & E Allyn Smith. 2007. Review of the logic of conventional implicatures by Chris Potts. *Linguistics and Philosophy* 30. 707–749.

AnderBois, Scott, Adrian Brasoveanu & Robert Henderson. 2013. At-issue proposals and appositive impositions in discourse. *Journal of Semantics*. 1–46. doi: 10.1093/jos/fft014.

Armstrong, Meghan, Kartie Carmichael & Scott Schwenter. 2011. »X much? constructions and the contextual licensing of scale inversion«. Talks given at LSA 2011.

Barker, Chris, Raffaella Bernardi & Chung-chieh Shan. 2010. Principles of interdimensional meaning interaction. *Proceedings of SALT 20*. 109–121. url: http://elanguage.net/journals/salt/article/view/20.109.

Bierwisch, Manfred. 1989. The semantics of gradation. *Dimensional adjectives* 71. 261.

Biezma, Maria & Kyle Rawlins. 2016. »Or what?: Challenging the speaker«. In*Proceedings of NELS*. Vol. 46. 93–106.

Bresnan, Joan W. 1973. Syntax of the Comparative Clause Construction in English. *Linguistic Inquiry* 4(3). 275–343. url: http://www.jstor.org/stable/4177775.

Caponigro, Ivano & Jon Sprouse. 2007. Rhetorical questions as questions. In Estela Puig-Waldmüller ed., *Proceedings of Sinn und Bedeutung 11*, 121–133.

Corver, Norbert. 1997. Much-support as a last resort. *Linguistic Inquiry*. 119–164.

Cresswell, Max J. 1976. *The semantics of degree. Montague grammar, ed. by Barbara Partee, 261–92*.

Cruse, David Alan. 1986. *Lexical Semantics*. Cambridge: Cambridge University Press.

Dodson, Steve. Dec. 8, 2010. »Much?« Blog post. url: http://languagehat.com/much/.

Doetjes, Jenny. 2007. Adverbs and quantification: Degrees versus frequency. *Lingua* 117(4). 685–720.

Doetjes, Jenny S. 1997. *Quantifiers and Selection: On the Distribution of Quantifying Expressions in French, Dutch and English*. PhD thesis. University of Leiden.

Eckardt, Regine. 2014. *Dear Ede!* Semantics and pragmatics of vocatives. In Daniel Gutzmann, Jan Köpping & Cécile Meier eds., *Approaches to Meaning. Compositions, Values, Interpretation*, 223–249. Leiden: Brill. doi: 10.1163/9789004279377_011.

Farkas, Donka F & Kim B Bruce. 2009. On reacting to assertions and polar questions. *Journal of Semantics* 27. 81–118.

Frazier, Lyn, Brian Dillon & Charles Clifton. 2014. A note on interpreting damn expressives: transferring the blame. *Language and Cognition* 7. 291–304. doi: 10.1017/langcog.2014.31. url: http://dx.doi.org/10.1017/langcog.2014.31.

Giorgolo, Gianluca & Ash Asudeh. 2011. Multidimensional semantics with unidimensional glue logic. In Miriam Butt & Tracy Holloway eds., *Proceedings of the LFG11 Conference*, 236–256.

Giorgolo, Gianluca & Ash Asudeh. 2012. $\langle M, \eta, \star \rangle$ Monads for conventional implicatures. In Ana Aguilar Guevara, Anna Chernilovskaya & Rick Nouwen eds., *Proceedings of Sinn und Bedeutung 16*, 265–278.

Gunlogson, Christine. 2003. *True to Form. Rising and Falling Declaratives as Questions in English*. London: Routledge.

Gunlogson, Christine. 2008. A question of commitment. *Belgian Journal of Linguistics* 22(1). 101–136.

Gutzmann, Daniel. 2011. Expressive modifiers & mixed expressives. In Olivier Bonami & Patricia Cabredo-Hofherr eds., *Empirical Issues in Syntax and Semantics 8*, 123–141. url: http://www.cssp.cnrs.fr/eiss8/gutzmann-eiss8.pdf.

Gutzmann, Daniel. 2013. Expressives and beyond. An introduction to varieties of use-conditional meaning. In Daniel Gutzmann & Hans-Martin Gärtner eds., *Beyond Expressives. Explorations in Use-Conditional Meaning*, 1–58. Leiden: Brill. doi: 10.1163/9789004183988_002. url: http://www.danielgutzmann.com/work/expressives-and-beyond/.

Gutzmann, Daniel. 2015a. Continuation-based semantics for modal particles. Deriving syntax from semantics. *MIT Working Papers in Linguistics (MITWPL)* 75. 133–150.

Gutzmann, Daniel. 2015b. *Use-Conditional Meaning. Studies in Multidimensional Semantics*. Oxford: Oxford University Press.

Gutzmann, Daniel. in prep. *The Grammar of Expressivity*. Oxford: Oxford University Press.

Gutzmann, Daniel & Eric McCready. 2016. Quantification with pejoratives. In Rita Finkbeiner, Jörg Meibauer & Heike Wiese eds., *Pejoration*. (Linguistik Aktuell/Linguistics Today 2016), 75–102. Amsterdam and Philadelphia: John Benjamins.

Kaplan, David. 1999. »The meaning of *ouch* and *oops*. Explorations in the theory of meaning as use. Ms. UCLA«. 2004 version. Ms. Los Angeles.

Koev, Todor. 2013. *Apposition and the structure of discourse*. PhD thesis. Rutgers University.

Kratzer, Angelika. 2004. Interpreting focus: Presupposed or expressive meanings? A comment on Geurt and van der Sandt. *Theoretical Linguistics* 30. 123–136. doi: 10.1515/thli.2004.002.

Kubota, Yusuke & Wataru Uegaki. 2011. Continuation-based semantics for conventional implicatures. The case of Japanese benefactives. In Ed Cormany, Satoshi Ito & David Lutz eds., *Proceedings of Semantics and Linguistic Theory (SALT) 19*, 306–323. url: http://elanguage.net/journals/index.php/salt/article/view/19.18/1394.

Liberman, Mark. Dec. 11, 2010. »X much«. Blog post. url: http://languagelog.ldc.upenn.edu/nll/?p=2836.

Malamud, Sophia A & Tamina Stephenson. 2015. Three ways to avoid commitments: Declarative force modifiers in the conversational scoreboard. *Journal of Semantics* 32(2). 275–311.

McCready, Eric. 2010. Varieties of conventional implicature. *Semantics & Pragmatics* 3. 1–57. doi: 10.3765/sp.3.8.

McCready, Eric & Yohei Takahashi. 2013. Good Reasons. In Daniel Gutzmann & Hans-Martin Gärtner eds., *Beyond Expressives. Explorations Use-conditional Meaning*, 201–229. Leiden: Brill.

Millard, Josh. Dec. 8, 2010. »Datawank much?« Blog post. url: http://metatalk.metafilter.com/20088/Datawank-much.

Nouwen, Rick. 2007. On appositives and dynamic binding. *Research on Language and Computation* 5. 87–102.

Portner, Paul. 2007. Instructions for interpretation as separate performatives. In Kerstin Schwabe & Susanne Winkler eds., *On Information Structure, Meaning and Form*, 407–426. Amsterdam: Benjamins. url: http://www9.georgetown.edu/faculty/portnerp/my_papers/voc-topic-force.pdf.

Potts, Christopher. 2005. *The Logic of Conventional Implicature*. Oxford: Oxford University Press.

Potts, Christopher. 2007. The expressive dimension. *Theoretical Linguistics* 33(2). 165–197. doi: 10.1515/TL.2007.011.

Potts, Christopher & Shigeto Kawahara. 2004. Japanese Honorifics as Emotive Definite Descriptions. *Proceedings of SALT* 14. 235–254.

Predelli, Stefano. 2008. Vocatives. *Analysis* 68. 97–105.

Predelli, Stefano. 2013. *Meaning without Truth*. Oxford University Press. doi: 10.1093/acprof:oso/9780199695638.001.0001.

Rett, Jessica. 2008a. »A degree account of exclamatives«. In*Proceedings of SALT*. Vol. 18. 601–608.

Rett, Jessica. 2008b. *Degree modification in natural language*. PhD thesis.

Rett, Jessica. 2014. The polysemy of measurement. *Lingua* 143. 242–266.

Rett, Jessica. 2016. The semantics of many, much, few, and little.

Sadock, Jerrold M. 1971. »Queclaratives«. In*Seventh Regional Meeting of the Chicago Linguistic Society*. Ed. by Douglas Adams et al. 223–232.

Schlenker, Philippe. 2010. Supplements within a unidimensional semantics I: Scope. In Maria Aloni, Harald Bastiaanse, Tikitu de Jager & Katrin Schulz eds., *Logic, language and meaning: 17th Amsterdam Colloquium*, 74–83. Springer.

Shan, Chung-chieh. 2001. Monads for natural language semantics. In Kristina Striegnitz ed., *Proceedings of the ESSLLI-2001 student session*, 285–298.

Solt, Stephanie. 2010. Much support and more. In Much support and more, *Logic, Language and Meaning*, 446–455. Springer.

Solt, Stephanie. 2015. Q-adjectives and the semantics of quantity. *Journal of Semantics* 32(2). 221–273.

Sullivan, Kevin. June 8, 2010. »Buffy (and SNL) 'much' much?: Slang research with Hulu.com, Part 2«. Blog post. url: http://languageandhumor.com/blog/2008/06/buffy-and-snl-much-much-slang-research-with-hulu-com-part-2/.

Syrett, Kristen & Todor Koev. 2014. Experimental Evidence for the Truth Conditional Contribution and Shifting Information Status of Appositives. *Journal of Semantics* (Advance Access). doi: 10.1093/jos/ffu007. eprint: http://jos.oxfordjournals.org/content/early/2014/07/12/jos.ffu007.full.pdf+html.