Semantic ambivalence and expletive negation

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Abstract

This paper introduces a particular sort of ambiguity in natural language: 'semantic ambivalence'. A construction is ambivalent iff it is ambiguous between a meaning and (something equivalent to) its negation. Constructions that encode scalar relations exhibit a particular subspecies of ambivalence called 'ambidirectionality' whenever the most informative bound of one interval is identical to the most informative bound of the interval corresponding to its negation. The ultimate goal of this paper is an explanation of the cross-linguistically common phenomenon of so-called expletive or expletive negation: instances of negation that do not seem to impact the truth conditions of a sentence. I'll argue for a consensus in which expletive negation, as a phenomenon, is split into two classes (corresponding to high and low negation); and argue that ambidirectionality can explain all instances of low expletive negation.

1 Introduction

The sentence in (1) is ambiguous:

(1) Donka misfired badly.

There is one reading of (1) in which Donka hit the target: it was her goal to misfire, but she did a bad job of it. This is an interpretation in which, intuitively, the adverb *badly* modifies the verbal event (of misfiring). The second reading of (1) describes a situation in which Donka misfired, and the result was bad, so the arrow hit e.g. her instead of the target. In this interpretation, intuitively, the adverb is modifying the result state of the verbal event, instead of the verbal event itself.

From the point of view of informal analysis, the ambiguity exhibited by this sentence is a direct consequence of result state polysemy, the ability of a telic VP to instead denote either its bounded event or the result of that bounded event. But there are, in a sense, two negative morphemes in (1) (or negative-ish: the negative verbal prefix *mis-* and the negative antonym *bad*, Heim 2007), and this, too, contributes to the ambiguity of (1); the two counterparts in (2) lack this ambiguity.

(2) a. Donka fired badly.
b. Donka misfired well.

If (2a) demonstrates the same ambiguity, it isn't evident, because an event of firing badly is satisfied by the same truth conditions as a result state of firing badly. And if (2b) demonstrates the same ambiguity, it also isn't evident, because an event of successfully misfiring is satisfied by the same truth conditions as a result state of successful misfiring. So while the two negation-y morphemes in (1) are contributing towards its ambiguity, their contribution is indirect, and certainly not due to their ability to e.g. scope with respect to one another.

This point is underscored by the fact that we can find sentences that are ambiguous in the same way as (1) but that do not have two negative-ish morphemes.

(3) Anna scored lower than Adrian.

If what we care about is who won, (3) can be used to report two distinct results, depending on the context. If Anna and Adrian are playing basketball, we can confidently infer from (3) that Adrian won. If instead they are playing golf – a game in which the winner uses fewer strokes than their opponents – the sentence is ambiguous,

or at least potentially confusing. In one reading of (3), the scalar relation *lower* is tracking the numerical score; that reading informs us that Anna won. But it's also possible to interpret *lower* as tracking some dimension tied to success at the game, meaning 'worse'.[1] In this reading, it's possible to infer that Adrian won.

Both of these sentences are examples of a phenomenon I call **semantic ambivalence**: they are ambiguous in a particular way, namely they are ambiguous, and one reading entails (something equivalent, in context, to) the negation of the other. In (1), for instance, the result-state reading of the sentence (in which Donka misfired so badly she hit herself) entails the negation of the verbal-event reading (in which Donka successfully hit the target). Effectively, if it's true Donka misfired, it's also true she didn't successfully hit the target. And if it's true she successfully hit the target, it's also true she didn't misfire. With respect to (3), a proposition that is true iff Anna beat Adrian is obviously false in any situation in which Adrian beat Anna, and vice-versa. (4) defines this notion.

(4) semantic ambivalence $=_{\text{def}}$
A sentence S is **ambivalent** iff it is ambiguous between at least two propositions, p and q, such that $p \equiv \neg q$ and $q \equiv \neg p$.

The notion of equivalence here is intended to invoke comparison between propositions at the truth-conditional level, and I intend to allow room for this equivalence relation to be context-sensitive (i.e. to allow for relative equivalence in a certain context but not necessarily others, for e.g. the golf case in (3)).

The goal of this paper is to examine the phenomenon of expletive or expletive negation, across languages, and to argue that one circumscribed subset of expletive negation phenomena are just instances of semantic ambivalence: the negation seems optional because it is, in fact, truth-conditionally inert. In accomplishing that goal, I'll do two main things along the way: i) provide an overview of the phenomenon of expletive negation (Section 2), and of the rough consensus that there seem to be two distinct types of expletive negation (Section 3); and ii) I will argue that one subtype of expletive negation – the syntactically low one – is licensed by a specific subtype of semantic ambivalence, which I call **fixed-point ambidirectionality**. I show how and why this property underpins expletive negation licensed in comparatives (Section 4) and temporal relations (Section 5), and why it's still predicted that this kind of expletive negation still licenses NPIs. I will end by discussing even broader applications of the proposal (Section 7), including what I take to be lexicalized versions of the same phenomena: pseudo-antonyms like *peel* and *unpeel*.

2 A background on expletive or expletive negation

Expletive negation, also known as spurious negation, characterizes uses of negation that don't seem to impact the truth conditions of a sentence. We should understand the word 'negation' here to refer to the same string as the language's standard negation. N-words and negative concord – exemplified by English *none* and Romance *nada*/*niente*/*rien*, respectively – don't qualify as expletive negation because they are not string-identical to standard negation (see Delfitto, 2020, for additional reasons for separating out expletive negation from n-words and negative concord).

The exemplars of expletive negation that have been given for English are not the most natural examples; I list common ones in (5).

(5) a. I missed (not) seeing you this summer. (Jespersen, 1965)
b. How can I avoid (not) doing stupid things? (Horn, 2009)

It's worthwhile noting, in the context of these examples, the at least apparent similarity between expletive negation and putative speech errors, as in (6).

(6) Sam could(n't) care less.

I believe it's hard to differentiate between examples like (6) and what appears to be more legitimate examples of expletive negation, like the example in (7); it's not clear what sort of empirical property or theoretical

[1] There is a great deal of lexical variability in terms of which adjectives can be associated with which dimensions of measurement (Svenonius and Kennedy, 2006; Schwarzschild, 2006); note that the sentence *Anna scored below Adrian* seems to unambiguously track the numerical scale. This difference in interpretive flexibility of positionals has been noted elsewhere; see e.g. Rett (2015a).

explanation we would turn to for the distinction.

(7) Congress has a terrible track record of (not) doing something about AI.

And I'm skeptical of intuitions that one is a mistake and the other is a systematic part of a speaker's grammar. As such, the following discussion and proposal can be construed as a generalization about where the grammar generates expletive negation, or where the speech error that results in expletive negation tends to occur.

That said, we need not rely on English examples: an extensive cross-linguistic typology, presented in Jin and Koenig (2021), observes expletive negation in various constructions across 74 languages.[2] It is clear from that survey that some expletive negation constructions are more widely represented cross-linguistically than others.

Trigger	Number of occurrences
BEFORE (UNTIL)	50
FEAR (AFRAID)	39
FORBID (PROHIBIT), WITHOUT (NOT WITHOUT)	10
ALMOST (NEARLY), UNLESS, AVOID (INEVITABLE)	8
PREVENT, DENY	7
DOUBT, THAN	6
BEWARE (WATCH OUT), REFUSE	5
WORRY, SINCE	4
IMPOSSIBLE (CANNOT BE THAT), FROM (KEEP FROM, HOLD BACK FROM), TOO…TO	3
CRITICIZE, ONLY (IT ONLY DEPENDS ON SOMEONE THAT)	2
ADVISE AGAINST, ANXIOUS, BLAME, CANNOT WAIT, COMPLAIN, DESPAIR, DISLIKE, FORGET, HARDLY, HIDE, LACK, MISS, REGRET, RARELY, STOP, WARN	1

Table 1: The distribution of expletive negation across contstructions, according to Jin and Koenig (2021)

The rest of this section briefly exemplifies the four major categories of construction that expletive negation occurs in. Section 3 details a broad consensus that these four major categories fall into two distinct types: high and low expletive negation.

2.1 Temporal relations

As Table 1 shows, expletive negation, across languages, is overwhelmingly triggered by the temporal relation 'before' (and crucially never by 'after').[3] This phenomenon is illustrated below.

(8) Olga mangera son déjeuner avant qu'elle (ne) regarde la télévision.
O eat.3s.FUT her lunch before that-she NEG watch.3s.SUBJ the television
'Olga will have lunch before she watches TV.' *French* (Cépeda, 2018)

(9) Yisheng (hai mai) lai yiqian, Zhangsan jiu si le.
doctor yet NEG come before Z then die ASP

[2]Commas in this table indicate that two different phenomena come in at that number of cross-linguistic instances; for instance, the negative verb 'doubt' has been found to license expletive negation in six languages, as has the comparative construction (listed here as 'than'). It's worthwhile noting that Jin and Koenig have a much more narrow and theory-dependent definition of expletive negation than the present paper. They say:

> "The occurrence of a negator is an instance of expletive negation if[f –AUTHOR] (i) it is included in a syntactic dependent of a lexical item (verb, adposition, adverb, or collocation); (ii) it is triggered by the meaning of that lexical item; but (iii) it does not contribute a (logical) negation to the proposition that the syntactic dependent denotes."

Focusing on just the third clause without speculating about the source of the negation us to remain neutral about the mechanisms underpinning expletive negation. It also provides an opportunity to say the same thing about expletive negation when it has a plausible licensing operator as we do about cases where it does not.

[3]When I refer to a word in a particular language, I will italicize the mention of that word, e.g. *before*. When I jointly refer to an English word as well as its cross-linguistic counterparts, I will use quotes, e.g. 'before'.

'Before the doctor came, Zhangsen died.' *Mandarin* (Lin, 2016)

(10) Lo fermerai prima che (non) faccia qualche sciocchezza.
him stop-2sg-FUT before that NEG do-3sg-SUBJ some folly
'You will stop him before he does anything silly.' *Italian* (Cépeda, 2018)

(11) Wasure(-nai) uti ni henzi-o kakimasyoo.
forget-NEG inside to answer-ACC let's.write
'I will write an answer before I forget it.' *Japanese* (Ramat, 2022)

(12) gabl (maa) atzawaʒ ʕisht maʕa ahl-ii.
before NEG I.get.married.IPFV I.live.PFV with family-my
'Before I got married I lived with my parents.' *Januubi* (Jin and Koenig, 2021)

Just to underscore the point, none of the 'after' versions of these constructions is grammatical with embedded negation; in no language is the sentence 'Zhangsen died after the doctor didn't come' semantically equivalent to the sentence 'Zhangsen died after the doctor came'.

Expletive negation is also reported in *until* or *since* constructions, although at a much lower rate.[4]

(13) Resto finché (non) arriva qualcuno.
stay.1.SG until NEG arrive-3SG somebody
'I'll stay until somebody arrives.' *Italian* (Espinal, 2000)

(14) Me quedaré hasta que (no) me echen.
I_{CL} stay-FUT.1SG until that NEG me throw.3PL
'I will stay until they throw me out.' *Spanish* (Espinal, 2000)

(15) Malia-ka nolay-lul (an) pwulu-nci olay toyessta.
M-NOM song-ACC NEG sing-since long.time became
'It has been a long time since Maria sang a song.' *Korean* (Cépeda, 2018)

(16) Quantes mentides (no) deu haver dir des quen estem casats!
how.many lies NEG must.3SG have told since that are.1PL married
'(S)he must have told so many lies since we got married!' *Catalan* (Espinal, 2000)

2.2 Degree relations and preference statements

expletive negation is also licensed in comparatives in some languages, as illustrated below.[5]

(17) Maria è più alta di quanto (non) sia Carlo.
M is taller than of how-much NEG be-3sg-SUBJ C
'Maria is taller than Carlo.' *Italian* (**?**)

(18) Marie est plus grande que Sylvie ne l'est.
M is more tall than S NEG it.is
'Marie is taller than Sylvie.' *French* (Cépeda, 2018)

[4]It's tricky to tell exactly, because Jin and Koenig (2021) lump *before* constructions in with *until* constructions, and they also lump *since* constructions in with *worry that* constructions, which they report at four instances. Anecdotally, it seems as though *before* constructions are very well represented cross-linguistically; *until* constructions are somewhat well represented; and *since* constructions are present, but not robustly represented. Further, Ramat (2022) reports an instance of expletive negation in Neo-Aramaic in *as* temporal relations:

(i) ʾé-⁺dan léla ⁺vàra, ɟʿəxcəla.
that-time NEG.COP.3FSG enter.PROG laugh.PROG.3FSG
'Just as she enters, she laughs.' *Neo-Aramaic* (Ramat, 2022)

It's worthwhile considering that expletive negation is licensed in simultaneous temporal constructions – not just those involving precedence or succession – but I have no idea how unusual this instance of expletive negation is. Note that, in (i), the negation is in the matrix clause, not the embedded one.

[5]There are some languages that form comparatives using 'A-not-A' constructions, of the form 'X is A, Y is not A' (Stassen, 1985). Despite some claims in the literature (Ramat, 2022, cf.), these do not qualify as expletive negation, but are a distinct type of strategy of comparison. The expletive negation constructions here involve explicit negation constructions (Kennedy, 2007), like the English *-er*.

I have found only examples in Italian and French comparatives, where the incidence of expletive negation seems quite productive across the board. Comparatives are included in the survey in Jin and Koenig (2021) under 'than'. Notably absent in the discussion of expletive negation are superlative ('-est') or excessive ('too') constructions;[6] Cépeda (2018) is the only one to argue that expletive negation is licensed in (French) equatives. I'll return to discuss equatives in Section 4.

Espinal (2000) additionally reports that Spanish licenses expletive negation in preference statements like (19); this construction, too, is not reported in Jin and Koenig (2021), and I have no evidence that expletive negation is licensed in these constructions in any other language.

(19) Preferiría salir con vosotros que (no) estar trabajando.
prefer-1sg-COND leave with you than NEG be working
'I would rather go out with you than be working.' *Spanish* (Espinal, 2000)

Finally, Jin and Koenig (2021) report that expletive negation is licensed in Italian in 'nearly' (*per poco*) and 'hardly' (*appena*) constructions as well as in comparatives, but do not provide examples of either.

2.3 Negative verbs and exclusionary predicates

I characterize this category semantically, to include any verbal predicate that seems to be the negative antonym in a verbal antonym pair. This includes: 'forbid' or 'prevent' (cf. 'allow'); 'doubt' (cf. 'believe'); 'forget' (cf. 'remember') 'refuse' (cf. 'agree'), and negative attitude verbs like 'fear' and 'worry'. Collectively, they form a large portion of the incidence of expletive negation in the survey in Jin and Koenig (2021).

(20) 9 mǐng wǎngyǒu mángzhe quànshuo, què wàng-le (méi) bàojǐng.
9 CLF netizen busy persuade but forget-PFV PFV.NEG call.police
'9 netizens were busy persuading but they forgot to call the police.' *Mandarin* (Jin and Koenig, 2021)

(21) Dubto que (no) mengi.
doubt-1sg that NEG eat-3sg-SUBJ
'I doubt that he eats.' *Catalan* (Espinal, 2000)

(22) a batu a (mana) graduate manang.
he delay he PFV.NEG graduate last.year
'He delayed graduating last year.' *Zarma-Sonrai* (Jin and Koenig, 2021)

(23) Em temo que (no) escullin nou director.
me be.afraid-1sg that NEG elect-3pl-SUBJ new director
'I am afraid that a new director would be elected.' *Catalan* (Espinal, 2000)

(24) J'ai peur qu'il (ne) pleuve demain.
have-1sg fear that.it NEG rain.SUBJ tomorrow
'I fear that it will rain tomorrow.' *French* (Jin and Koenig, 2021)

Many languages reported in Jin and Koenig (2021) exhibit expletive negation for more than one of these sorts of predicates; Mandarin, for instance, licenses expletive negation in 'fear', 'forget' (demonstrated in (20)),

[6] Labelle (2023) focuses on Quebecois French superlative constructions, but instead of licensing *ne*, the string observable in standard negation, these constructions instead include *pas*. They therefore seem to exemplify some other sort of construction; see Labelle (2023) for analysis.

(i) a. *La Russie est le plus grand pays qu' il n'y a.
the Russia is the most large country that there.NEG.is
'Russia is the largest country there is.'
b. La Russie c'est le plus grand pays qu' il y a pas.
the Russia it.is the most big country that there.is NEG
'Russia is the biggest country there is.' *French* (Labelle, 2023)

I have no explanation of why *pas* is licensed here, and I have no explanation for why it's *ne* (instead of *pas*) that's used in canonical expletive negation constructions in European French. However, it seems plausible to me that *ne* is a weaker negation marker than *pas*, and that it would be odd to choose the stronger of two negative markers for expletive negation, by virtue of its ultimate lack of any semantic oomph. Thanks to Chris Collins, Richard Kayne, and Gary Thoms (p.c.) for discussion here.

'complain', 'regret' and 'avoid'; Zarma-Sonrai, a Nilo-Saharan language, licenses expletive negation in 'hide' as well as 'delay' (demonstrated in (22)).

2.4 Exclamatives and surprisal contexts

A very significant portion of the literature on expletive negation focuses on its licensing in exclamatives and other surprisal contexts, although these constructions were not included in the survey in Jin and Koenig (2021). The phenomenon has historically been exemplified in English, as in (25), but is more commonly associated with (other) European languages (see especially Villalba, 2003, 2004; Portner and Zanuttini, 2000).

(25) a. I wouldn't be surprised if she { didn't try / tried }.
b. How often have I (not) watched him! (Jespersen, 1965)

(26) Quines bogeries no devia dir!
which crazinesses NEG have.must say
'Which nonsenses she must have said!' *Catalan* (Villalba, 2004)

(27) (Hogy) János miket el (nem) olvasott.
that J what.PL.ACC PRT NEG read.PST.3SG
'What things John has read!' *Hungarian* (Halm and Huszár, 2021)

I have seen only a few claims of expletive negation being licensed in nominal exclamatives, e.g. in the Spanish examples in (28); other languages include Paduan (Portner and Zanuttini, 2000) and German (Meibauer, 1990).

(28) La de tonterías que no habrá dicho!
the.FEM of nonsenses that NEG would.have-3SG said
'The nonsense that (s)he would have said!' *Spanish* (Villalba, 2004)

And I have seen only one claim of expletive negation being licensed in inversion exclamatives, the Paduan (29). I discuss expletive negation in sentence exclamations in the next section.

(29) No ga-lo magnà tuto!
NEG has-3SG.CL eaten everything
'He's eaten everything!' *Paduan* (Portner and Zanuttini, 2000)

3 Two types of expletive negation

A consensus seems to be forming that there are two distinct types of expletive negation, corresponding roughly to high and low negation (Greco, 2018, 2019; Halm and Huszár, 2021). There are several considerations at play: i) the location of the negation in the sentence; ii) whether or not the instance expletive negation licenses NPIs or n-words; and iii) whether the expletive negation is optional or obligatory. I'll start by reviewing the very interesting case of Hungarian, which seems to place high expletive negation, low expletive negation, and standard negation all in separate places on the syntactic spine (Halm and Huszár, 2021).

3.1 High and low expletive negation

Hungarian licenses expletive negation in *wh*-exclamatives, as shown in (30). This seems to be an instance of low expletive negation; in (30), the negation is preverbal (and optional).

(30) (Hogy) János miket el (nem) olvasott.
that J what.PL.ACC PRT not read.PST.3SG
'What things János has read!' *Hungarian*, **wh-exclamative** (Halm and Huszár, 2021)

Hungarian also licenses expletive negation in sentence exclamations, where it occurs much higher in the tree (and is obligatory):

(31) (Hat) János nem el olvasott egy könyvet?!
well J not PRT read.PST.3SG a book.ACC
'János has read a book!' *Hungarian*, **sentence exclamation** (Halm and Huszár, 2021)

Finally, it appears as though this high expletive negation can coexist in sentence exclamations with standard negation (forming sentence exclamations with negative claims, illustrated in (32)).

(32) Hát nem nem JÁNOS vette fel a telefont?!
well not not J pick.PST.3SG PRT the phone.ACC
'It was not János who answered the phone!' *Hungarian*, **sentence exclamation**, ibid.

The result is apparently three different syntactic positions for three different types of negation in Hungarian, as schematized in (74):

(33)

$[_{TopP^*}$	$[_{SDP}$	nem	$[_{NegP}$	nem	$[_{TP}$ [	nem+T^0	]]]]]
		expl. neg.		stand. neg.		expl. neg.	
		(surprise neg.)				(wh-excl. a.o.)	

Extremely high CP negation for one sort of expletive negation (the sort that forms sentence exclamation); typical CP negation for standard negation; and TP-internal negation for a second sort of expletive negation (the sort that forms *wh*-exclamatives).

Another consideration in favor of the conclusion that there is more than one type of expletive negation is the observation, due to Greco (2018, 2019), that there is variation in whether a expletive negation in a given construction or language licenses NPIs or n-words in that language.

	Weak-NPIs	Strong-NPIs	Not-also	N-words
Until-clauses	+	–	–	+
Who knows-clauses	+	–	–	+
Unless-clauses	+	–	–	+
Indirect-Interrogatives	+	–	–	+
Comparative-clauses	+	–	–	+
Negative Exclamatives	–	–	–	–
Rhetorical Questions	–	–	–	–
Not…that- clauses	–	–	–	–
Rather than-clauses	–	–	–	–
Before-clauses	–	–	–	–

Table 2: Greco's (2018) EN typology based on Italian

As depicted in Table 2, no expletive negation licenses strong NPIs, but some in Italian license weak NPIs, and some license n-words like *niente*. This minimal triple, differentiating between standard negation and the two types of expletive negation, is from Greco (2019:779).

(34) a. Non è arrivato nessuno ad aiutarmi.
NEG is came nobody to help-CL.me
'Nobody came to help me.' *Italian standard negation*

b. Rimarrai qui finché non arriverà nessuno ad auitar-mi.
stay.2SG.FUT here until EN come.3SG.FUT nobody to help-CL.me
'You will stay here until someone comes to help me.' *Italian 'until' expletive negation*

c. *Che cosa non ha fatto nessuno!
what thing NEG has done nobody
'What has no one done!' *Italian wh-exclamative expletive negation*

Like Hungarian, Italian especially seems to differentiate between low and high negation, with the latter being used to form sentence exclamations (which Greco 2019 calls 'Surprise Negation Sentences').

(35) E non mi è scesa dal treno Maria?!
and NEG CL.to.me is got off-the train M
'Mary got off the train!' *Italian Surprise Negation sentence* (Greco, 2019)

As Greco (2019) observes (see also Belletti, 2004), there are certain properties of Surprise Negation Sentences that set them apart from standard negation cases; for instance, they are incompatible with focus raising (in contrast to standard negation, or low cases of expletive negation). These high instances of negation, too, are marked as obligatory.

In sum, in-depth looks into both Hungarian and Italian suggest that, at least in these languages, there is a version of expletive negation that occurs relatively high in the tree and is obligatory, and a version of expletive negation that occurs relatively low in the tree and is optional. The former (high expletive negation, or 'strong' in Greco's typology) seems to be associated with exclamations and rhetorical questions (as well as, in Italian but not Hungarian, 'before' constructions); the other (low expletive negation, or 'weak') includes 'until' and comparative constructions.

This state of affairs makes good sense from the perspective of our definition of expletive negation as negation that doesn't impact the truth conditions of a sentence. *A priori*, there are two ways for an instance of negation to not have a truth-conditional impact: one, by targeting descriptive, truth-conditional content equivalent to its negation, and two, by targeting illocutionary (or non-descriptive, or not-at-issue) content. Natural language seems to have innovated both types of expletive negation, in different positions: high expletive negation is high because it applies to non-truth-conditional content.

This perspective offers an informal explanation for the difference in optionality between high and low expletive negation. High expletive negation changes meaning, it just does so at the non-truth-conditional level (negating speaker expectation or commitment). So an utterance with high expletive negation, when it is licensed, is not equivalent to a version of that utterance without high negation, making it non-optional in the semantic sense. We see this noted in Halm and Huszár (2021:554) regarding the difference between Hungarian Surprise Negation constructions and *wh*-exclamatives, for which negation is obligatory in the former but optional in the latter (this was also confirmed by János Egressy, p.c.):

(36) a. Hogy János miket el (nem) olvasott!
that J what.PL.ACC PRT NEG read.PAST.3SG
'What surprising things John has read!' *Hungarian wh-exclamative*

b. Hát János nem el olvasott egy könyvet?!
well J NEG PRT read.PAST.3SG a book.ACC
'John has read a book!' *Hungarian surprise negation sentence*

On the other hand, if low expletive negation is indeed truth-conditional negation applied in special instances in which it does not actually impact the truth-conditions, we would predict it to be optional: we would predict such constructions with negation to be semantically equivalent to their non-negated counterparts. And this is what seems to be the case. The goal of this paper is to target the class of low expletive negation: the negation that seems to be targeting truth-conditional content, yet without actually impacting the truth conditions of the sentence.

While there is still lots more work to be done on high expletive negation (also referred to as 'expressive negation'), there is a general consensus on what sort of phenomenon it is. Yoon (2011) argues that expressive negation is a marker semantically distinct from standard negation that convey[s] a presupposition of the speaker's negative attitude towards the content of the proposition denoted by the sentence. Delfitto (2020) analyzes expressive negation as operating on a presupposition or implicature, instead of descriptive, at-issue content. Halm and Huszár (2021) analyzes expressive negation as denying "the presupposition that the event denoted by the proposition is a member of the set of events likely to be true" (p568). Finally, Tahar and Mari (2023) analyze expressive negation as negating the Krifkaesque speech act, à la Krifka (2001). However, none of these proposals include a compositional semantic account of what expressive negation is doing, so there is more work to be done.[7]

[7]A generalization and analysis of high expletive negation, targeting non-truth-conditional content, is presented in AUTHOR *forthcoming*.

In what follows, I briefly discuss existing accounts of low expletive negation.

3.2 Extant accounts of low expletive negation

Expletive negation has received a wide variety of analytical treatments in the last two decades or so, and these accounts fall broadly into two categories: those that think expletive negation is a syntactic reflex, the result of a particular syntactic configuration; and those that think it is a semantic reflex, the result of a particular sort of configuration of meaning. I'll briefly present the two types in turn.

3.2.1 Syntax-based accounts

Syntactic accounts of (low) expletive negation (van der Wouden, 1997; Espinal, 1997, 2000; Abels, 2004; Zeijlstra, 2004; Greco, 2018) all have in common the idea that it is i) semantically inert, i.e. doesn't contribute the same meaning that standard negation does; and ii) licensed by a negation-like higher operator from a higher clause, as negative concord is.

From my point of view, these accounts share the same flaws, one of which is their inability to explain a pretty robust cross-linguistic polysemy between expletive negation and standard negation. If standard negation morphemes and expletive negation morphemes each denote a different meaning, we wouldn't expect to see the universality in this strategy that we see. At the very least, this makes an ambiguity account like these ones a last resort, relative to analyses that treat the two instances of negation as denotationally identical.

But there are a few other concerns these accounts raise: the first is that they can't account for matrix instances of expletive negation. We've seen two such constructions: Surprise Negation sentences in Hungarian and Italian, but also *wh*-exclamatives (in Section 2.4). In at least Hungarian, the latter instantiates low expletive negation. So even accounts of low expletive negation are responsible for the occurrence of expletive negation in *wh*-exclamatives, which don't appear to have any higher operator that might license the negation.

The second is the notion of 'negation-like' that these accounts must lean quite heavily on. Clear cases of expletive negation – like the negative or exclusionary predicates in Section 2.3 – look like they involve negation. But many other cases do not. Such accounts are forced to analyze a lot of things as negation-like that don't appear to be negation-like at all, such as *hope* (37), or to deny that these count as expletive negation constructions.

(37) a. Elpizo mi(-pos) ine kati aplo.
hope.PRS les.NEG-that is something simple
'I hope that it is something simple.' *Greek* (Makri, 2013)[8]

b. Con-un meyli-ka oci(-anh)-ul-{ci/kka} kitayha-ko issta.
J-TOP M-NOM come-NEG-FUT-NF.C hope-ASP
'John hopes that Mary might come.' *Korean* (Yoon, 2022, 620)

There is also a possible prediction, in these accounts, that the distribution of expletive negation across constructions is broader than it is; for instance, while 'doubt' licenses expletive negation in many languages, the overt negation of belief predicates doesn't seem to (i.e., the embedded negation in **I do not think Daniel does not like cake* cannot be expletive negation, in English or other languages).[9]

Finally, syntax-based accounts are not able to explain attested semantic nuances of the inclusion of expletive negation, discussed at length in (Eilam, 2009; Cépeda, 2018), and which I will return to examine in Section 5. (74) shows that expletive negation is incompatible with temporal interval specifications like 'in two hours'.

(38) a. dani yišan ad še-ha-mesiba tatxil (be-od ša'ataim).
D will.sleep until that-the-party will.start in two.hours

b. dani yišan ad še-ha-mesiba lo tatxil (*be-od ša'ataim).
D will.sleep until that-the-party NEG will.start in two.hours
'Danny will continue to sleep until the party starts (in two hours).' *Hebrew* (Eilam, 2009)

[8]While this data is in print, it has been disputed to me as ungrammatical by a native Greek speaker.

[9]Chris Collins (p.c.) also points out that these accounts might predict expletive negation is possible in the intermediate clause in comparatives like *A is taller than I said/think B is*, instead of the lowest clause, which is where we would expect to see it. It remains to be seen what expletive negation languages do with these multi-clausal comparative constructions.

I will end this discussion of syntax-based accounts as pointing out a clear advantage they have: if the distribution of expletive negation is syntax-based, instead of meaning-based, we would expect a fair amount of cross-linguistic variation, i.e. we would expect a language to have expletive negation in Construction A but not Construction B, and vice-versa, and this is what we appear to see: construction-specific variation within the broadly universal phenomenon of expletive negation. Accounting for this variation is a challenge for meaning-based accounts, and we should keep it in mind when evaluating semantic analyses, including the present proposal.

3.2.2 Meaning-based accounts

There are lots of gestures at meaning-based accounts of high expletive negation, or expressive negation, as discussed at the end of Section 3.1. But I am aware of only one meaning-based proposal for low expletive negation, the one in Cépeda (2018).[10] In this section, I'll review this proposal – which is close in many ways to what I will endorse – and discuss an empirical shortcoming of it.

Cépeda (2018) presents a very comprehensive account of expletive negation that starts with temporal relations and tentatively extends to comparative and negative verb constructions. She defends the hypothesis that expletive negation is just standard negation (in particular, it induces set complementation). She argues that expletive negation is licensed whenever the relevant semantic relation allows overlap.

> "Temporal clauses with *after* never allow [expletive negation] in any natural language as the semantics of *after* does not allow temporal overlap between the main eventuality and the interval expressed in the subordinated clause" (Cépeda, 2018, 207).

Cépeda's account implicitly answers a pressing question: why is low expletive negation prevalent in scalar constructions, or relations between entities (like temporal relations) that are (intrinsically) strictly linearly ordered? Crucially, if a scalar relation R between a matrix argument x and subordinated argument y (both intervals, or ordered sets of entities) allows overlap between x and y, as depicted in Figure 1, then $xR\neg y$ is true whenever xRy is true.

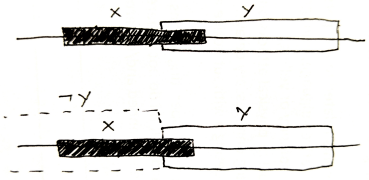

Figure 1: A schematic of a scalar relation R that allows overlap between its interval arguments x and y

I will not spend a lot of time on the mechanics of Cépeda's analysis, because the relevant parts are reproduced – in the spirit but not in the details – of the analysis proposed here. And because I can discuss its mistaken empirical prediction without going into the mechanisms behind those predictions.

Cépeda characterizes (low) expletive negation – like I will – as truth-conditional negation that does not ultimately have an impact on the truth-conditions. However, she characterizes those contexts in which such a phenomenon is possible incorrectly in the case of degree relations, and is forced into an unattractive characterization of temporal relations to maintain this claim.

Notoriously, the comparative *-er* encodes a strict linear ordering: if A is taller than B, then A's height is strictly greater ($>$) than B's height. In contrast, the equative *as* encodes a non-strict linear ordering: in a context in which A is as tall as B, the equative construction sets a lower bound: we expect A to be at least as tall as B ($\geq$), unless the context supports strengthening to an 'exactly' interpretation as a scalar implicature (Rett, 2015b). In other words, the equative relation allows overlap between its two arguments, while the comparative does not: only the equative could be true in a situation in which A and B are the same height. But expletive negation

[10] Eilam (2009) argues that low expletive negation in Hebrew (at least) is a domain widener, along the lines of *-ever* in free relatives. This is partly due to his observation that the addition of expletive negation in a free relative in Hebrew amounts to a switch from e.g. 'what' to 'whatever'. But it is an ambiguity account, and so doesn't fit the desideratum of accounting for the cross-linguistic robustness of the phenomenon of expletive negation, so I won't review it here. It's also explicitly specific to Hebrew.

is licensed in comparatives nevertheless. Cépeda predicts that it never is, but that it is licensed in equative constructions.[11]

So Cépeda's characterization of what contexts license expletive negation – or, more precisely, neutralize the truth-conditional contribution of standard negation – isn't the right one, at least for degree relations. But it's also not ideal in the context of temporal relations, either. From the start of semantic analysis of temporal relations, scholars have noted the temptation to analyze 'before' and 'after' as non-duals or non-antonyms – 'before' exhibits a lot of restrictions that 'after' does not – but agreed that they are in fact duals, and that any asymmetries must be explained independently of the core meaning of the relations (Anscombe, 1964; Beaver and Condoravdi, 2003; Rett, 2020a). All extant accounts of 'before' and 'after', therefore, analyze the former as encoding strict temporal precedence ($\prec$), and the latter as encoding strict temporal succession ($\succ$). Cépeda (2018) is forced to move away from this treatment of them as duals, and instead characterizes 'before' as encoding non-strict precedence ($\preceq$), and 'after' as strict succession ($\succ$). As far as I know, there is no reason to think that 'before' allows overlap between its two arguments; in other words, the sentence *A jumped before B screamed* is false in a situation in which the two events happened simultaneously.

My goal in what follows is to seize on Cépeda's suggestion that low expletive negation has something to do with scalarity – in particular to do with instances of scalar overlap – and to give a more targeted semantic account of how and why. This requires briefly returning to the notion of semantic ambivalence, and in particular to the idea that some but not all scalar constructions exhibit the subtype of ambivalence I call **fixed-point ambidirectionality**.

4 Expletive negation in comparatives

This account of expletive negation assumes that every instance of negation has the same denotation, and that any apparently expletive instance of negation is one that just does not impact the truth conditions of the sentence it occurs in. This could be because the negation is targeting something extra-truth-conditional; we are putting those cases aside as instances of high or expressive expletive negation. The other clear possible context for expletive negation, then, are contexts where the denotation of a phrase and the denotation of the negation of that phrase are either identical, or equivalent in context. I introduced this concept as 'semantic ambivalence' in the introduction in a way independent from expletive negation, illustrated by (39) (repeated from (1) and (3)).

(39) a. Donka misfired badly.
b. Anna scored lower than Adrian.

Recall that (39a) is ambivalent by virtue of its event/result state polysemy, and (39b) is contextually ambivalent, by virtue of the rules of golf (lower scores are better, unusually for sports). This means that each of these sentences has a single meaning in a given context (especially once the context is entirely fixed, i.e. once we work out whether the event or result state is salient, or which sense of 'lower' is at play). So while it's true that these sentences are ambivalent out of the blue, their meanings are fixed in a given context, resulting in a loss of their

[11] The survey in Jin and Koenig (2021) does not report any instances of expletive negation in equative constructions, but Cépeda (2018) does (citing Larrivée, 1994):

(i) a. C'est une recherche qui est aussi importante que ne l'est le séro-diagnostic.
it.is a research that is as important as NEG it.is the serodiagnosis
'It is research that is as important as serodiagnosis.'
b. Elle en a dépensé autant qu'elle n'en a gagné.
she of.it has spent as.much that.she NEG-of.it has earned
'She has spent as much as she has earned.' *French* (Cépeda, 2018)

However, a similar construction is ungrammatical in Italian.

(ii) Maria è tanto intelligente quanto {è / *non sia} Carlo.
M is as intelligent how.much {is / NEG be-3SG-SUBJ} C
'Maria is as intelligent as Carlo is.' *Italian* (Napoli and Nespor, 1976, 67)

It's clear that any analysis of expletive negation will need to account for not just where it can be licensed, but cross-linguistic variation in licensing. It is sufficient for the present purposes to note that, while Cépeda may correctly predict that expletive negation is licensed in equative constructions, she incorrectly predicts that it is not licensed in comparative constructions.

semantic ambivalence. Given that we hold fixed the context of evaluation when we calculate entailment, this means that semantic ambivalence is not sufficient to license expletive negation. And sure enough:

(40) a. Donka misfired badly. ↮ It's not the case that Donka misfired badly.
b. Anna scored lower than Adrian. ↮ It's not the case that Anna scored lower than Adrian.

I suggest here that we need to look to scalar constructions to find instances of semantic ambivalence in a single context. In what follows, I provide a brief outline of scale semantics before turning to degree relations as our first of two case studies for the present account of expletive negation.

4.1 Scale semantics

Negating a normal, non-scalar proposition doesn't amount to anything close to synonymy. This is because we model propositions as sets of possible worlds, not strictly ordered with respect to one another (even when they're grouped into plurals).

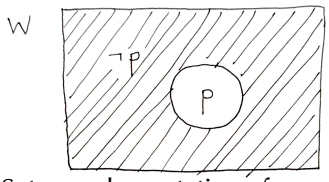

Figure 2: Set complementation of possible worlds

But other semantic entities are strictly ordered in any given context, that is, their plurals are organized linearly, in terms of scales or intervals (Schwarzschild and Wilkinson, 2002; Dotlačil and Nouwen, 2016). This group includes – at least – degrees, times, and locations. And relations in these strictly-ordered domains – like *taller*/*shorter*, *before*/*after*, and *above*/*below* – exhibit special properties in natural language that other types of relations don't, especially in contexts in which the relation cares about maxima (Rett, 2015a).

Relations between sets in any strictly-ordered domain: i) relate two intervals; and ii) form antonyms that differ only in their ordering. Regarding the first property: there are four different kinds of intervals, defined in terms of their minimum and maximum, and in particular in terms of whether or not these endpoints are included in the extension of the interval, or are merely useful in demarcating the interval. Closed intervals are intervals whose maximum and minimum are both included in the interval.

(41) a. **open interval**: $(a, b) = \{x : a < x < b\}$
b. **upper closed interval**: $(a, b] = \{x : a < x \leq b\}$
c. **lower closed interval**: $[a, b) = \{x : a \leq x < b\}$
d. **closed interval**: $[a, b] = \{x : a \leq x \leq b\}$

Regarding the second property: scalar antonyms are often characterized (but need not be) as differing only in their orderings (Rett, 2015c). For instance, gradable adjectives like *tall* and *short* are assumed to denote functions from individuals to sets of degrees (type $\langle x, \langle d, t\rangle\rangle$), and properties formed from these antonyms are assumed to mutally entail one another: in a situation in which x is 5ft tall, the set of degrees corresponding to their tallness is represented as (0,5ft], and the set of degrees corresponding to their shortness is [∞, 5ft].

(42) a. positive antonyms: (0,∞]
b. negative antonyms: $[\infty, 0]$

This inverse relationship is also evident when gradable adjectives participate in comparatives, as shown in (43).[12]

(43) a. A is taller than B. ↔ B is shorter than A.
b. A is shorter than B. → A is not taller than B.

[12]Of course, the positive construction *A is tall* does not entail the positive construction *A is not short* nor vice-versa, but this is because both constructions are evaluative (Rett, 2015c): they both require not just that A be on the 'tall' or 'short' scale – requirements that are trivially satisfied – but that they be significantly high on the 'tall' or 'short' scale. This amounts to something that's been called the "extension gap" (Klein, 1982) between relative adjectives, and we have reason to attribute it to evaluativity, rather than the meaning of the adjectives themselves, because it disappears outside of evaluative contexts, as shown in (43). The reason we have only asymmetric entailment in (43b) is because of the comparative relation, not the antonyms. In (43b), the negation can target the parameter; in (43a), it cannot.

Additionally, there is evidence that scalar relations implement **order-sensitive maximality** (Rullmann, 1995): what counts as maximal on a scale depends on the ordering of that scale (a scale-based implementation of 'maximal informativity', Beck and Rullmann 1999; von Fintel et al. 2014). This order-sensitive notion of maximality is defined in (44).[13]

(44) $\textsc{max}(X_O) = \iota x[x \in X \wedge \forall x' \in X[(x' \neq x) \rightarrow x \; O \; x']]$, where O is either $>_+$ or $>_-$

Recall that Cépeda (2018) argued that expletive negation arises in the context of relations that allow overlap. I'll argue that this is a key insight into the distribution of expletive negation, but it needs to be refined a little bit, to take into consideration the nature of closed intervals, and order-sensitive maximality. I argue that it is precisely when antonyms relate (partially) closed intervals that we find truth-conditional vacuity of negation, because the complement set of a closed interval is also a closed interval. This idea is similar to the Cépeda's proposal, but instead of attributing the overlap in meaning to a particular relation (e.g. the comparative, as opposed to the equative), this perspective makes it primarily about the scalar arguments themselves.

4.2 A scale-sensitive semantics for comparatives

Explicit comparatives are formed with an adjectival parameter and the comparative morpheme, which marks the parameter. I'll use the terms in (45) to identify these parts.

(45)

A (is)	tall	-er	than	B
TARGET OF COMPARISON	PARAMETER	PARAMETER MARKER	STANDARD MARKER	STANDARD OF COMPARISON

Syntactically, the comparative morpheme is characterized as taking two degree relatives as its arguments (Bresnan, 1973; Chomsky, 1977):

(46) a. A is taller than B ~~(is tall)~~.
b. -er([$_{CP}$ $\textsc{Op}_d$ B is ~~d-tall~~]) ([$_{CP}$ $\textsc{Op}_{d'}$ A is d'-tall])

Semantically, the comparative morpheme is characterized as relating the most informative or maximal points of the intervals or sets of degrees denoted by those degree relatives (Schwarzschild, 2008).

(47) $[\![\text{A is taller than B}]\!] = \textsc{max}_+(\{d' : \text{tall}(\text{a}, d')\}) >_+ \textsc{max}_+(\{d : \text{tall}(\text{b}, d)\})$

Three of these components are scale-sensitive:

1. the first maximality operator, whose ordering is determined by the matrix degree relative [A is d'-tall] (in particular, by the valence of the adjective that forms the degree relative)
2. the second maximality operator, whose ordering is determined by the embedded degree relative [B is d-tall] (in particular, by the valence of the adjective that forms the degree relative)
3. the relation itself (>), as determined by the parameterized comparative: $>_+$ for *tall*, and $>_-$ for *short*

Crucially, because the comparative's parameter is always the same as the adjective forming the matrix degree relative, this amounts to an implicit requirement that the matrix degree relative and the comparative relation always involve the same ordering.

There is, however, no requirement that the embedded degree relative share the same valency with the comparative relation. This is something expected from studies of the phenomenon of cross-polar anomalies (Kennedy, 2001a; Buring, 2008); we can vary the valency of the embedded degree relative (even outside of comparisons of deviation readings), as in *The ladder was shorter than the house was high*, but the valency of the matrix degree relative always matches that of the parameter.

As a consequence of all of this, in a context in which A is 6ft tall and B is 5ft tall, we make the following predictions about the truth conditions of comparatives:

[13] I use $>_+$ and $>_-$ for > and <, respectively. I'm doing the same by using $\textsc{max}_+$ and $\textsc{max}_-$, instead of MAX and MIN, respectively. My chosen formulations show that it's the same relation involved in each, just applied to reverse scales. They also don't rely on the idea that one ordering (the one from n to $n + 1$) is more basic than the other.

(48) $[\![\text{A is taller than B}]\!] = \text{MAX}_+(\{d' : \text{tall(a}, d')\}) >_+ \text{MAX}_+(\{d : \text{tall(b}, d)\})$

a. $= \text{MAX}_+(\ (0,6]\ ) >_+ \text{MAX}_+(\ (0,5]\ )$

b. $= 6 >_+ 5$ ('6ft is higher/higher on the 'tall' scale than 5ft' – true)

(49) $[\![\text{A is shorter than B}]\!] = \text{MAX}_-(\{d' : \text{short(a}, d')\}) >_- \text{MAX}_-(\{d : \text{short(b}, d)\})$

a. $= \text{MAX}_-(\ [6, \infty\ ]\ ) >_- \text{MAX}_-(\ [5, \infty\ ))$

b. $= 6 >_- 5$ ('6ft is lower/higher on the 'short' scale than 5ft' – false)

4.3 Accounting for expletive negation in comparatives

Expletive negation in comparatives differs from expletive negation in temporal relations like *before* in two respects that we should attempt to account for: 1) it's much rarer, cross-linguistically (Jin and Koenig, 2021, noted it on six occasions), and 2) its distribution isn't sensitive to antonymy, namely expletive negation is just as licensed in *taller* comparatives as it is in *shorter* comparatives, while it is not licensed in *after* temporal relations.[14]

In order to port the independently-motivated semantics of the comparative to expletive negation, we need to ask the question: what happens when we put negation in the embedded argument of these comparatives? In English, the result is ungrammatical.[15]

(50) *A is taller than B isn't.

But we have independent evidence of cross-linguistic variation with respect to whether or not a language forms degree relatives at all, as shown in the contrast below (Caponigro, 2004):

(51) *A ate how much B did.

(52) A ha mangiato quanto ha mangiato B.
A have-3SG.PRES ate how.much have-3SG.PRES ate B
'A ate the same amount as B.' (*lit.* 'A ate how much B did.') *Italian*

And we also see a cross-linguistic difference in the extent to which degree relatives allow coercion to maxima, and how (Kotek, 2011). So it seems like there are independent, language-specific prohibitions on any sort of negation in the embedded argument of comparatives, and we would expect such languages (like English) to not allow expletive negation in those constructions.

Putting aside what English can do, what does our theory predict about what happens when we embed negation in a positive-antonym comparative? We predict that the set of degrees to which x is tall is bounded by their height, and we also predict that the set of degrees to which x is <u>not</u> tall is bounded by their height.[16]

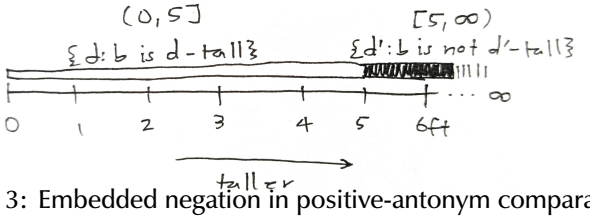

Figure 3: Embedded negation in positive-antonym comparatives

[14]Modified from a datum from Napoli and Nespor (1976) p76:

(i) La situazione in America è peggiore di quanto non si arrivi a immaginare.
the situation in A is worse than how.much NEG REFL.CL arrive to imagine
'The situation in America is worse than one can imagine. *Italian*

[15]There are two apparent exceptions: the first is comparisons of deviation, like *The older they get the cuter they ain't* (from *The Simpsons* Season 4 Episode 10). Because they involve parameters with two distinct dimensions of measurement, we get a deviation reading. But, while "cross-polar anomalies" like **A is taller than B is short* are reported to be ungrammatical in English (Kennedy, 2001b), there seems to be increased acceptability when the adjectives have commensurate but distinct dimensions of measurement, and when the negative adjective is first, as in *The ladder is shorter than the house is high* (Buring, 2008).

[16]I characterize x's height in both cases as a closed bound. It is perhaps more intuitive to characterize x's height as a closed bound for their degrees of tallness and an open bound (so, $(5,\infty]$) for their degrees of not-tallness. But crucially, in both cases, x's height is an informative bound: the relevant bound is either 5 or the closest infinitesimal degree to 5. So, for the purposes of natural language semantics the two approaches are effectively equivalent; a single point has no length. The same holds for my choice to characterize ∞ as an open bound.

The truth conditions are strictly speaking different than they were in (48): holding fixed our context in which A is 6ft tall and B is 5ft tall, we get:

(53) $[\![\text{A is taller than B is not}]\!] = \text{MAX}_+(\{d' : \text{tall}(a, d')\}) >_+ \text{MAX}_-(\{d : \neg\text{tall}(b, d)\})$

a. $= \text{MAX}_+(\ (0,6]\ ) >_+ \text{MAX}_-(\ [5,\infty)\ )$

b. $= 6 >_+ 5$ ('6ft is higher/higher on the 'tall' scale than 5ft' – true)

However, these truth conditions are equivalent to those in (48) (i.e., mutually entailed by): the most informative bound of each (i.e. the maximum on their respective scales) is equivalent, $\text{MAX}_+((0,5])$ is equivalent to $\text{MAX}_-([5, \infty))$. And so any context in which A is taller than B is tall is also a context in which A is taller than B is not tall, given our understanding of how degree relatives with a negation are interpreted. This is a great example of fixed-point ambidirectionality: because our MAX operator is scale-sensitive, and because a person's degrees of tallness share a closed bound with their degrees of shortness / not-tallness, we predict low negation has no truth-conditional impact.[17]

Incidentally, the way our theory treats embedded degree relatives of the form 'x is not d-tall' is equivalent to the way our theory treats embedded degree relatives of the form 'x is d-short' (compare (54) to (53)).

(54) $[\![\text{A is shorter than B is not}]\!] = \text{MAX}_-(\{d' : \text{short}(a, d')\}) >_- \text{MAX}_-(\{d : \neg\text{short}(b, d)\})$

a. $= \text{MAX}_-(\ [6, \infty]\ ) >_- \text{MAX}_+(\ [5,0)\ )$

b. $= 6 >_- 5$ (false)

This is by design, given the antonymic relationship discussed in the previous section.

The result is an account of why negation in the standard or embedded argument of comparatives – when it is licensed morphosyntactically – that explains why it is truth-conditionally inert with both positive- and negative-antonym parameters. This explains one of the two challenges this section started with; the other was the observation that expletive negation in comparatives is relatively rare, cross-linguistically. We can explain this by appealing to the fact that explicit degree comparatives are themselves relatively rare cross-linguistically (Stassen, 1985; Beck et al., 2004; Kennedy, 2007), and this analysis predicts that explicit degree comparatives are required for comparative expletive negation. (A common alternative is multi-clausal constructions, like 'A is tall, B is not'.) Within the class of languages that have an explicit degree comparative – which includes English – there is an additional requirement that the embedded argument of the comparative, the one that encodes the standard of comparison, be i) a clause; and ii) be coerceable (to a maximum) or negatable. English fails on this last requirement, for whatever reason.

Interestingly, expletive negation is reported to be unavailable for differential comparatives in Italian. Differential comparatives are explicit comparatives whose comparative marker is modified by a measure phrase (MP), as in *A is two inches taller than B*. Compare (55) to the standard comparative in (62).

(55) *Maria è due metri più alta di quanto non sia Carlo.
M is two meters more tall than how.much NEG be-3SG.SUBJ C
'Maria is two meters taller than Carlo.' *Italian* (Napoli and Nespor, 1976, 70)

This is not something straightforwardly predicted by the present proposal; if the embedded degree relative is coerced into its maximum, we would expect no difference in the ability of the differential phrase to target Carlo's height. It's possible, however, that differential phrases require each of the comparative intervals to be matching in valency, perhaps so that the differential direction is unambiguous.

There is one more empirical observation in favor of this ambidirectionality approach for comparatives.[18] Kennedy and McNally (2005) argue quite convincingly that relative adjectives (like *tall*) differ from absolute adjectives (like *full*) in their scale structure: relative adjectives are associated with open scales, i.e. they have ∞ as a bound when valued, while absolute adjectives are associated with (lexically) closed scales, i.e they don't have ∞ as a bound. The present account predicts that expletive negation is licensed only in degree relations involving open scales; closed scales have two potentially informative bounds, not one, and so the overlap between a form

[17] Collins (2023) includes an extensive examination of adjectives negated by standard negation or the prefix *un-*, and concludes that the two both contribute low negation. Since this account, too, predicts synonymy between *unhappy, not happy*, and *sad*, Collins' work might provide good insight into why the expletive negation used in scalar constructions is always syntactically low.

[18] Thanks to Matt Husband for pointing out the relevance of the relative/absolute distinction and to Carlo DeCristofaro for the Italian judgments.

and its negation is only partial. And preliminary evidence from Italian suggests this is in fact the case; namely, that expletive negation is only licensed in comparatives whose parameters are formed from relative adjectives.

(56) a. Carlo è più alto di quanto non lo sia Luigi.
C is more tall than how-much NEG it is.SUBJ L
'Carlo is taller than Luigi.'
b. *Il bicchiere è più pieno di quanto non lo sia l'altro.
the glass is more full than how-much NEG it is.SUBJ the.other
'This glass is more full than the other one.'

4.3.1 Interim summary

In this section, I've honed in on a specific subclass of semantic ambivalence called ambidirectionality. A construction $R(B)$ is ambidirectional iff it is equivalent to $R(\neg B)$ because B and $\neg B$ share an informative bound (and R relates informative bounds).

Recall that Cépeda (2018) predicts that a scalar construction licenses expletive negation iff it includes an operator that allows overlap. I've tweaked that perspective, and the resulting prediction is that a scalar construction licenses expletive negation iff it is scale-sensitive, and when its embedded argument and its complement interval share the same bound. Assuming the traditional analysis of comparatives as encoding strict linear order ($>$) and equatives as encoding non-strict linear order ($\geq$), this version of the scalarity hypothesis better predicts the distribution of expletive negation in comparatives.

This proposal predicts that expletive negation could be licensed in equatives, too, provided that the embedded arguments of equatives can be coerced to maxima, just like the embedded arguments of comparatives. Following the analysis of comparatives in (47), we'd predict that the semantics for equatives looks something like this:

(57) $[\![\text{A is as tall as B}]\!] = \text{MAX}_+(\{d' \text{: } \mathsf{tall}(\mathsf{a}, d')\}) \geq_+ \text{MAX}_+(\{d \text{: } \mathsf{tall}(\mathsf{b}, d)\})$

If this is right, we predict embedded negation to be truth-conditionally inert, just as it is for comparatives, in languages that license such a thing morphosyntactically. This requires a language whose equative construction takes clausal arguments, not just phrasal ones, which is relatively rare (Rett, 2015b); and a language with an explicit equative marker, which is also rare (Rett, 2020c).

The next section extends the idea of ambidirectionality to the trickier case of temporal relations.

5 Expletive negation in temporal relations

The challenge posed by expletive negation in temporal relations is that they do exhibit an antonymic asymmetry: expletive negation is licensed by 'before' across languages, but never 'after'. I'll extend the characterization of ambidirectionality to temporal relations in this section, and present an account for why. I'll begin by presenting a background semantics for these temporal relations (and their pretty robust context-sensitivity).

5.1 A background on 'before' and 'after'

There are a lot of attested differences between 'before' and 'after' above and beyond the licensing of expletive negation. 'Before', but not 'after', has a veridicality ambiguity (Anscombe, 1964), as illustrated in (58):

(58) a. Mozart died before he finished the Requiem. $\not\dashrightarrow$ Mozart finished the Requiem.
b. Mozart died after he finished the Requiem. $\rightarrow$ Mozart finished the Requiem.

'Before', but not 'after', licenses NPIs, as in (78):

(59) a. Alec left the party before anyone else arrived.
b. *Alec left the party after anyone else arrived.

Both 'before' and 'after' constructions exhibit ambiguity, but in different environments (Heinamaki, 1974; Rett, 2020a). 'Before' constructions are ambiguous when the embedded verbal event is telic, and unambiguous

otherwise; 'after' constructions are ambiguous when the embedded verbal event is atelic, and unambiguous otherwise. These generalizations are illustrated in (60) and (61).

(60) **unambiguous 'before' and 'after' sentences**

a. *before* + atelic embedded event (EE):
John met Mary before she was president. $\prec$ initial

b. *after* + telic EE:
John met Mary after she climbed the mountain. $\succ$ final

(61) **ambiguous 'before' and 'after' sentences**

a. *before* + telic EE:
John met Mary before she climbed the mountain. $\prec$ initial, $\prec$ final

b. *after* + atelic EE:
John met Mary after she was president. $\succ$ initial, $\succ$ final

Specifically, (60a) can only be true iff John met Mary before she started being president, while (61a) is ambiguous between describing a situation in which John met Mary before she started climbing the mountain, and before she summited the mountain. In contrast, (60b) can only be true iff John met Mary after she summited the mountain, while (61b) is ambiguous between describing a situation in which John met Mary before she started being president, and in which John met Mary after she ceased being president.

The key to explaining this semantic variation is embracing independent evidence that VPs can be coerced in certain contexts (de Swart, 1998). In particular, stative or atelic VPs can be coerced into denoting their starting points ('inchoative coercion', Dölling 2014):

(62) a. Gary was surprised. *stative*

b. Gary was surprised when Anna paid the check. *inchoative*

(63) **inchoative coercion**:[19]
If VP is a process with duration T, VP can denote T or $\textsc{glb}(T)$, where $\textsc{glb}(T) = \iota t[t \in T \wedge \forall t' \in T[t \preceq t']]$

And telic VPs can often be coerced into denoting their endpoints ('completive coercion'; Dölling 2014):

(64) a. Matt climbed the mountain. *accomplishment*

b. Matt climbed the mountain at seven o'clock sharp. *semelfactive / telos*

(65) **completive coercion**:
If VP is a culmination with duration T, VP can denote T or $\textsc{lub}(T)$, where $\textsc{lub}(T) = \iota t[t \in T \wedge \forall t' \in T[t \succeq t']]$

Rett (2020a) uses these coercion processes – and what we know independently about what sorts of VPs can trigger them – to derive the truth conditions in (60) and (61) by appealing to these coercion processes qua maximizers. From this perspective, we can think of temporal relations, just like comparatives, as relating the most informative point of their embedded argument in a given context. For 'before', this is the earliest bound; for 'after', this is the latest bound. These temporal relations are defined in this context-sensitive way in (66).

(66) a. $[\![A \textit{ before } B]\!] = \exists t \in A[t \prec \textsc{max}_{\prec}(B)]$

b. $[\![A \textit{ after } B]\!] = \exists t \in A[t \succ \textsc{max}_{\succ}(B)]$

The predicted truth conditions for these constructions are illustrated in Table 3. There are two readings (those in (60)) that arise as the result of the relations in (66) straightforwardly applying to the temporal interval associated with the embedded event: the initial reading of the sentence *A before B* (which relates A to the most informative 'before' bound of the temporal trace of B); and the final reading of the sentence *A after B* (which relates A to the most informative 'after' bound of the temporal trace of B).

[19] In these definitions, GLB stands for 'greatest lower bound,' and LUB stands for 'least upper bound'.

	atelic EE	*example*	**coercion?**	**telic EE**	*example*	**coercion?**
A before B	$\prec$ initial	(60a)		$\prec$ initial $\prec$ final	(61a)	completive
A after B	$\succ$ initial $\succ$ final	(61b)	inchoative	$\succ$ final	(60b)	

Table 3: truth conditions of 'before' and 'after' sentences (Rett, 2020a)

The other two readings are the result of coercion. When the embedded event is atelic, it can be coerced into denoting its starting point. This is a redundant coercion in 'before' sentences, for which starting points are already the most informative. But it makes a difference in 'after' sentences (with atelic embedded events), resulting in the 'after the starting point' reading in (61b). On the other hand, when the embedded event is telic, it can be coerced into denoting its endpoint. This is a redundant coercion in 'after' sentences, for which endpoints are already the most informative. But it makes a difference in 'before' sentences (with telic embedded events), resulting in the 'before the endpoint' reading in (61a).

The definitions in (66) involve coercion to maxima, as in some previous accounts (e.g. Beaver and Condoravdi, 2003; Krifka, 2010a), but they are capable of predicting the full spectrum of truth conditional possibilities of these temporal relations (without any additional operators, like EARLIEST) because the maxima they reference is scale-sensitive, as it was for degree relations.

5.2 Ambidirectionality in 'before' (but not 'after')

I began the section on expletive negation in comparatives by noting that embedded negation in English comparatives is ungrammatical, but that our theories of negation and degrees nevertheless predict the meaning of such a construction. We can do the same thing here, for temporal relations.

It's a common assumption that the syntactic arguments of 'before' and 'after' are event-denoting, and that those events are associated with their temporal runtimes via some operator (like Davidson's τ operator) or via some contextual coercion. So what does it mean for a negated clause to denote a negative event? There are some instances where the notion has come in handy, for sentences like *Tom's failing to pass the test* and *I saw Mary not leave*. A recent account comes from Bernard and Champollion (2023), who analyze verbal or event negation as effectively set complementation (of events).

But what's the runtime of a negative event? Consider an event e of B having watched TV from 1-3pm. $\neg e$, in principle, corresponds to two disjoint runtimes: $(-\infty$,1pm] and [3pm,$\infty)$.

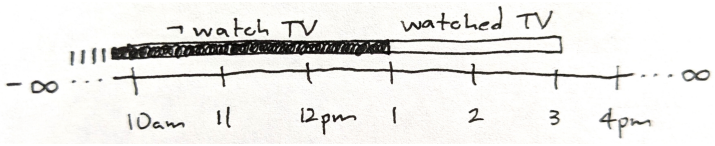

Figure 4: The temporal mapping of negative events

I am, however, going to only consider the pre-event runtimes of negative events as relevant for temporal relations with embedded negation, as depicted in Figure 4. I will stipulate this for now, because it works, but we would ideally have independent evidence for this assumption.[20]

Armed with an idea of what the runtime of a negated event is, we can now determine what our theory predicts is the meaning of a 'before' construction with negation in its embedded argument. Recall that 'before B', when B denotes a telic event, is in-principle ambiguous between a reading that relates to B's starting point, and a reading that relates to B's endpoint. This is demonstrated in (67a) for an event of watching TV from 1-3pm.

[20]It is tempting to attribute this asymmetry to the same sort of 'branching times' explanation given to the modality of the future tense. In other words, the past is always determinate, while events after a given situation are not necessarily determinate. Another consideration is that the sentences *Jiyoung didn't climb the mountain* and *Jiyoung wasn't president* – at least in neutral contexts – both prohibit Jinyoung from starting those eventualities. Encouraging work comes from Phillips (2025) and Altshuler et al. (2025), who argue that verbal negation is an irrealis marker: if this is right, we might predict that we can only calculate runtimes of past negative events, not future ones.

But when we extend the definition of 'before' to a construction with embedded negation, the two predicted truth conditions are as in (67b):[21]

(67) *context: A happened at 11am, B happened from 1-3pm*

a. ⟦A before B⟧ = 11am $\prec$ [1pm,3pm]
   (i) **starting point reading**: 11am $\prec$ 1pm
   (ii) **endpoint reading**: 11am $\prec$ 3pm (*only available for telic EEs*)

b. ⟦A before NEG B⟧ = 11am $\prec$ $(-\infty$,1pm]
   (i) **reading 1**: 11am $\prec$ 1pm
   (ii) **reading 2**: 11am $\prec -\infty$ TRIVIALLY FALSE

These sentences share one reading, (i); both have a non-coerced reading that relates A to 1pm, because 1pm is the most informative closed bound for both the positive and negative temporal intervals. This amounts to a prediction of ambidirectionality: we predict there is a context (one that doesn't instigate completive coercion) in which the sentences *A before B* and *A before* NEG *B* are truth-conditionally equivalent.

But there is a curious matter of this second reading, (ii), the one involving completive coercion (for telic embedded events). Our truth conditions predict the sentence *A before B* has a second reading that merely requires that A precede 3pm, not 1pm. But the predictions for this reading for the sentence *A before* NEG *B*, instead require that A precede $\neg\infty$, the maximum bound according to the inverse 'before' scale (i.e., the 'after' scale). These truth conditions are trivially false, rendering the sentence *A before* NEG *B* uninformative in any context in which it is licensed, because it is false regardless of the semantic content of the embedded argument.

It's natural to assume that a sentence that is ambiguous between two readings, one of which is trivially false, effectively unambiguously denotes the non-trivial reading. In other words, it seems clear that the disjunction of a reading and trivial falsity is equivalent to just that reading, i.e. that **r1** $\vee \mathbb{F} =$ **r1**. If this is the case, then *A before B* is ambiguous when *B* denotes a telic event, while *A before* NEG *B* is unambiguous. This amounts to a prediction that a expletive negation 'before' construction with a telic embedded event differs from its non-negated counterpart in that it lacks the completive or 'before the endpoint' reading (i.e. the inchoative reading of the negative event).

Remarkably, this is what we see; Cépeda (2018) argues that 'before' constructions with expletive negation target the starting point in French and Catalan; I have confirmation that the same is true for Hungarian and Italian.

(68) Olga mangera son déjeuner avant qu'elle ne regarde la télé.
O eat-3SG.FUT her lunch before that-she NEG watch-3SG.SUBJ the TV
'Olga will have lunch before she watches TV.' **starting point only**; *French*

(69) Abans que no et vegin, vés-te'n.
before that NEG you see.SUBJ go-CL-from.here
'Before they see you, you should go.' **starting point only**; *Catalan*

Recall that the tricky aspect of explaining expletive negation in temporal relations is that antonymy matters; in contrast to comparatives, where expletive negation is compatible with 'taller' and 'shorter' in languages that allow it, expletive negation is only ever licensed by 'before'. I finish this section by demonstrating that the current proposal predicts that negation is not expletive when it's embedded in 'after' constructions; this prediction is due at least in part to the assumption I made at the beginning of this section regarding the runtime of negative events (Figure 4).

Because we are interpreting negated events as pre-events (not post-events), the two constructions *before* NEG *B* and *after* NEG *B* relate the same embedded argument. The difference with 'after', of course, is that the relation is reversed. As before, I will illustrate both readings for the potentially ambiguous forms of 'after' sentences (the ones whose embedded events are atelic), which are the more complex case.

The non-negated relation in (70a) requires that A happen after the most informative bound on the 'after' scale. When the embedded event B is associated with its full runtime, a temporal interval, this amounts to a requirement that A succeed the endpoint of B (the reading in (70a):(ii)). When the embedded event is atelic, and we are in a context that supports inchoative coercion, B is instead associated only with its starting point, and *A after B* can also require that A succeed the starting point of B (the reading in (70a):(i)). This is a demonstration

[21] In what follows, I focus on cases where B denotes a telic event. This is the complex case; if B denotes an atelic event, we only expect the non-coerced readings in (i), which are the same in every context.

of the prediction that *A after B* is interpretable and ambiguous.

(70) *context: A happened at 4pm, B happened from 1-3pm*

a. ⟦A after B⟧ = 4pm ≻ [3pm,1pm]
   (i) **starting point reading**: 4pm ≻ 1pm (*only available for atelic EEs*)
   (ii) **endpoint reading**: 4pm ≻ 3pm

b. *⟦A after NEG B⟧ = 4pm ≻ [1pm,−∞)
   (i) **reading 1**: 4pm ≻ 1pm (*only available for atelic EEs*)
   (ii) **reading 2**: 4pm ≻ −∞ TRIVIALLY TRUE

When we add negation to the embedded argument of an 'after' construction, we still predict an ambiguity for atelic embedded events. For the coerced readings in (i), we predict that A is required to succeed the starting point of the embedded event, 1pm in this illustration. But things change for the standard, non-coerced reading in (ii), which requires that A succeed the endpoint of B. For the non-negated version, these truth-conditions are coherent and falsifiable, requiring in this illustration that A succeed 3pm in (70a):(ii).

But for the negated version in (70b):(ii), the relevant endpoint is $\neg\infty$. This non-coerced reading – available for any kind of embedded event – requires that A temporally succeed $\neg\infty$, which is trivially true, true for any argument A. Understandably, this makes all the difference for the licensing of the construction. For embedded telic events, the construction is unambiguously trivially true. For embedded atelic events, the construction is also trivially true, assuming that the disjunction of one reading and a trivially true reading results in a trivially true construction (**r1** $\vee$ $\mathbb{T}$ = $\mathbb{T}$). As a result, we can never find a context that will falsify the sentence, so the construction is uninformative and (we can imagine) expletive negation is not permissible. In fact, this approach predicts that any 'after NEG *B*' construction has a trivially true meaning, which explains why the construction is unacceptable (i.e. uninformative) in any situation, in any language.

In terms of cross-linguistic variation: it's relatively easy to explain why temporal relations (and *before* in particular) are so well-represented in the cross-linguistic list of expletive negation environments (Table 1): while explicit comparatives are rare, temporal relations are not. Degrees on the whole, in fact, are relatively rare across languages (Bochnak, 2015), but the representation of times is significantly more common, if not universal (Tonhauser, 2011). We still need, however, an explanation for why expletive negation is prohibited in temporal relations in English writ large. The present account predicts, for any given construction, whether it has the potential to license expletive negation; there are presumably many more semantic and morphosyntactic explanations for why expletive negation is not licensed in a given construction, in a given language. While I have provided some speculation about the absence of expletive negation in English comparatives, I do not know enough about similar restrictions on English temporal relatives to offer an explanation of the prohibition of expletive negation in English temporal relations.

The final subsection of this discussion of temporal relations extends these predictions tentatively and loosely to the temporal relations *until* and *since*.

5.3 Extensions to *until* and *since*

Recall from Section 2.1 that expletive negation is licensed by 'until' in many languages. 'Until' is semantically just like 'before' in that it requires its first argument to temporally precede its second.

(71) a. Matt danced before Danny sang.
b. Matt danced until Danny sang.

Unlike 'before', 'until' requires that its matrix argument be a durative event (instead of a punctual event, e.g. **Matt fell asleep until Danny sang*, Mittwoch 1977; de Swart 1996; Condoravdi 2008). It targets the endpoint of the matrix event A, but like 'before', 'until' can relate (the endpoint of) A to either the starting point or endpoint of B, if B is a telic event.

(72) Colin sang until Kelsey wrote her paper.

An informal survey of English speakers confirms that (72) can truthfully characterize a situation in which Colin stopped singing when Kelsey started writing her paper (perhaps, to give her a quiet work area) or one in which

Colin stopped singing when Kelsey finished writing her paper (perhaps, somehow, as motivation for her to finish). This demonstrates that telic event arguments embedded under 'until' are subject to the same endpoint coercions as they are for 'before'.

Based on the treatment of other temporal relations in Section 5, then, we get this definition for the meaning of *until* (ignoring the presupposition that requires A be durative):

(73) $[\![A \textit{ until } B]\!] = \text{MAX}_{>}(A) \prec \text{MAX}_{<}(B)$

It differs from the definition of 'before' in (66b) only in its treatment of the matrix event. Because only the embedded temporal argument is at play in expletive negation, we expect 'until' would be have exactly like 'before' in all relevant respects. We therefore predict that 'until' has all of the capability to host expletive negation that 'before' has, modulo language-specific morphosyntactic restrictions on the appearance of negation in the embedded clauses of temporal relations. This theory predicts, at least, that a language in which expletive negation is licensed in 'before' constructions is also one in which it is licensed in 'until' constructions. Notably, Cépeda (2018) (p71–73) argues that expletive negation 'until' constructions in Spanish have the same telicity-based disambiguation as do the 'before' constructions in (68) and (69).

Interestingly, expletive negation is not licensed in 'while' constructions, in any language. Unlike any of the temporal relations we've examined until now, *while* requires not just overlap but total overlap between the temporal intervals associated with each of its event arguments. It is easy to see why, if it's true that the runtime of A totally overlaps with the runtime of B, it would not totally overlap with the runtime of $\neg B$. And this prediction is crystallized beautifully in Hungarian, which employs a single word for 'until' and 'while', and allows expletive negation in temporal relations:

(74) a. A gyereke sírtak, amíg az anyjuk el sétált.
the children cry-3PL.PST AMIG the their.mom away walk-3SG.PST
'The children cried until their mom walked away.' **OR**
'The children cried while their mom walked away.'

b. A gyereke sírtak, amíg az anyjuk el nem sétált.
the children cry-3PL.PST AMIG the their.mom away NEG walk-3SG.PST
'The children cried until their mom walked away.' *Hungarian* (János Egressy, p.c.)

(74a), the construction without expletive negation, is ambiguous between an 'until' interpretation and a 'while' interpretation. (74b), its counterpart with embedded negation, can only receive an 'until' interpretation. This account predicts that this is because 'until' is ambidirectional in its embedded argument, but 'while' is not. Note that Cépeda's account, which predicts expletive negation is licensed wherever an operator allows overlap, would incorrectly predict that 'while' licenses expletive negation (at least, according to this semantic characterization of 'while').[22]

Expletive negation has been reported in the embedded argument of 'since' constructions in a handful of languages. We find expletive negation in two distinct types of 'since' constructions, and I'll discuss them each in turn. The first type is the most familiar given our discussion of other temporal relations, and is exemplified in Catalan ((75), from (16)).

(75) Quantes mentides (no) deu haver dir des quen estem casats!
how.many lies not must.3SG have told since that are.1PL married

[22] Privoznov (2022) observes something similar in Russian: *poka* ('while') requires that its embedded argument be imperfective, unless the verb phrase is i) an accomplishment; or ii) coerced into referring to the result state (instead of the verbal event); or iii) is negated.

(i) a. Osja zvoni-l Marine, poka ona #(ne) uš-l-a.
O call.IMP-PST.M M while she #(NEG) leave.PFV-PST-F
'Osja called Marine while she left.'

b. Osja pozvoni-l Marine, poka ona #(ne) uš-l-a.
O call.PFV-PST.M M while she #(NEG) leave.PFV-PST-F
'Osja called Marine before she left.' *Russian* (Privoznov, 2022, 8)

Like Hungarian, these are constructions in which 'while' is unambiguously interpreted as 'until' (with imperfective matrix arguments, 'before' with perfective matrix arguments). Privoznov observes that the negation is low, and that, despite the negation, these constructions entail that the embedded event occurred (in the parlance of the literature on 'before' and 'after', the constructions are veridical). Thanks to Tanya Bondarenko (p.c.) for introducing me to these data.

'(S)he must have told so many lies since we got married!' *Catalan* (Espinal, 2000)

I'll call these event-based 'since' constructions, because in them, 'since' seems to really be relating the matrix event A, which is always interval-denoting, to the embedded event B, which is always punctual. The same phenomenon is illustrated in (76) in English (from Cépeda, 2018, 147).

(76) Olga has been eating at this restaurant since she got the job.

In these event-based 'since' constructions, the punctual event B is associated with a single point in time, and that point in time marks the starting point of the matrix event A. 'Since' is deceptively like 'after' in this respect: both appear to require that B happen before A. But this is only apparent; what 'since' really does is require that B mark the starting point of A. Because B is necessarily point-denoting, we get an easy prediction of the licensing of expletive negation, given the assumptions in the previous subsection.

Imagine Olga got the job at noon on May 12, 2015. This means that $\neg B$ – the pre-event complement interval to B – is $(\neg\infty$,12pm], an interval with a closed bound of noon.[23] Given that *since* requires that its embedded argument be punctual – i.e. denote a single point in time, instead of an interval – this argument will always be coerced into its most informative endpoint, which will be the only informative bound (noon) in any context. As a result, we predict that 'since B' will be equivalent to 'since $\neg B$', even though it seems to encode something like a succession relation (rather than a precedence relation).

Of course, there are only a few languages in which expletive negation is licensed in 'since' constructions; this, too, must be attributed, in this approach, to language-specific restrictions on Aktionsart and telicity in these embedded clauses, and the ability of these clauses to be temporally coerced.

The second type of 'since' construction doesn't appear to relate two events, but instead uses the matrix argument to measure an event bounded by the embedded argument. This is exemplified in (85) (from (15)) for Korean; the discussion in (Cépeda, 2018) suggests that this is the only type of 'since' construction that allows expletive negation in Korean.

(77) Malia-ka nolay-lul (an) pwulu-nci olay toyessta.
M-NOM song-ACC NEG sing-since long.time became
'It has been a long time since Maria sang a song.' *Korean* (Cépeda, 2018, 162)

In (85), there is one and only one salient event, the event of Maria singing a song; the truth conditions imposed by the sentence measure the length of time from the end of that event to the speech time. (If we instead consider the more precise *It has been two minutes since Maria sang a song*, this endpoint requirement becomes more clear; the timer would have to have started as soon as she stopped, not as soon as she started singing.)

I won't offer a specific analysis of 'since' in these constructions, but it should be clear that this 'since,' too, requires that its embedded argument be associated, at least at some level, with a single point in time. In the non-negated version, this amounts to the endpoint point of the embedded event B; in the negated version, this amounts to the only informative endpoint of the pre-event temporal complement interval, which will be the same as (or effectively equivalent to) the endpoint of B.

In sum, the temporal relations that license expletive negation do not have in common the order they impose on their arguments (precedence vs. succession), nor do they have in common that they allow overlap ('while' allows overlap but does not license expletive negation; 'before' and 'after' do not allow overlap, but differ in their licensing of expletive negation). What they have in common is that they create an ambidirectional environment for their embedded argument: they semantically manipulate not a whole interval, but the most informative bound of that interval (or a single point in time), and in a scale-sensitive way. This puts them in line with other scalar relations, like comparatives, and possibly from spatial relations like 'from' (which I do not have the time to pursue in detail).

Before concluding, I address one extension of this analysis (to NPI-licensing) and one add-on – namely, manner implicature – to address subtle meaning differences reported between constructions and their expletive-negation counterparts.

[23] This is true regardless of whether we treat noon as a closed or open bound; see footnote 16.

6 Empirical and theoretical extensions

6.1 NPI-licensing

One important – and puzzling – hallmark of low expletive negation is the observation that it licenses (weak) NPIs, at least in Italian. This is demonstrated in (78).[24]

(78) Rimarri qui finché non avrai alzato un dito per aiutar-mi.
stay.2SG.FUT here until NEG have.2SG.FUT lifted a finger to help-me
'You will stay here until you have lifted a finger to help me.' *Italian* (Greco, 2018)

The proposal presented here – involving semantic ambivalence in general, and fixed-point ambidirectionality in particular – provides an attractive explanation of why expletive negation licenses NPIs. I take for granted here the standard explanation, due to Ladusaw (1979), that NPIs are licensed in downward-entailing environments, although of course there might be more to the story.

In the case of scalar relations, many of which license NPIs (79), we need to ensure that downward-entailingness is calculated on those scalar or interval arguments (not on the individual subjects that help form those arguments, Rett 2010). So, in a situation in which A is 5ft tall and B is 4ft tall, we get the following entailments (given that $\{1,2,3,4,5\} \supset \{1,2,3,4\}$):

(79) a. Dylan is taller than any other semanticist.
b. Roger is shorter than any other semanticist.

(80) a. C is taller than A. $\rightarrow$ C is taller than B.
b. C is taller than B. $\nrightarrow$ C is taller than A.

Note that the scale-sensitive account of antonymic relations introduced in §4.1 correctly predicts that negative comparative relations, too, license NPIs in their embedded arguments; holding fixed a situation in which A is 5ft tall and B is 4ft tall, we get the following entailments, precisely because $\{4,5,6,...\infty\}$ is a superset of $\{5,6,...\infty\}$.

(81) a. C is shorter than B. $\rightarrow$ C is shorter than A.
b. C is shorter than A. $\nrightarrow$ C is shorter than B.

In a fixed-point ambidirectional context, crucially, negation – even so-called expletive negation, in this account – impacts truth-conditions. It just does so uselessly. It doesn't affect the meaning of the proposition uttered, but it does affect the counterfactual relationship that matters for the sake of calculating downward-entailingness. I will illustrate this for the example of expletive negation in (7) (repeated here in (82)), because it is one of the few instances of expletive negation acceptable in English, so readers can intuitively engage with the predictions. Unfortunately, this means I'll only be able to provide an informal explanation of the prediction, as opposed to the formal accounts of comparatives and temporal relations presented earlier.

(82) Congress has a terrible track record of (not) doing something about AI.

The claim here is that the version of (7) with negation is truth-conditionally equivalent to the version without it: in a context in which Congress has done precisely two things about AI, that qualifies as a terrible track record on the scale of succeeding to do something about AI. And it also qualifies as a good track record on the scale of doing nothing about AI, which amounts to a terrible track record from a subjective/moral point of view. (This is equivalent to the verbal event / result state ambiguity illustrated in (1).)

[24] There are a few complications in illustrating this point more broadly: first, comparative constructions license NPIs in their embedded clause, which is a downward-entailing context (when characterized appropriately as a set of degrees), so they are not useful for illustrating that expletive negation is doing the licensing. Second, many examples of NPI-licensing under expletive negation come from the negative verbs discussed in §2.3, and I've chosen to put those constructions aside for now, as they don't exemplify fixed-point ambidirectionality (although I think it's plausible they could exemplify semantic ambivalence; see §7). Finally, many prominent syntactic accounts of expletive negation treat expletive negation itself as an NPI, so it's hard to separate empirical claims like the one involved in (78) with theoretical claims. I fully expect the phenomenon to be more universal than (78) suggests.

doing something	things done	doing nothing
terrible	1	great (which is terrible)
|	2	↑
|	3	|
↓	4	|
great	5	terrible (which is great)

Table 4: An illustration of semantic ambivalence and NPI-licensing

Assuming these two, reversed scales, we can see the property of downward-entailingness in action: the positive, 'doing something' scale is upward-entailing: if you've done two things and that counts as doing something, then doing three things would also count as doing something. On the flip side, the negative, 'doing nothing' scale is downward-entailing: if you've done two things and that counts as doing nothing, then doing one thing would also count as doing nothing. Notice the counterfactuality in both statements: the reality is, in any context, you've done n things, and that value is the same on either scale. But in that same context, the relationship between n and its scalemates on the positive scale will be the reverse of the relationship between n and its scalemates on the negative scale, which is the information we bring to bear in calculating downward-entailingness.

In sum, I hope to have illustrated informally how the notion of fixed-point ambidirectionality can explain how a proposition and its negation (or, more precisely, a proposition containing a clause and its negation) can have or contribute identical truth values despite displaying different monotonicity. This is just what fixed-point ambidirectionality is: two scales, one of which is the reverse of the other, function as an argument that only cares about their most informative bound. By definition, one of these scales will be downward-monotonic, and the other upward-monotonic. Therefore, the prediction here is that all low expletive negation – qua ineffective standard negation – is NPI-licensing, modulo idiosyncratic properties of the particular construction (perhaps it already licenses NPIs, like the comparative) and modulo the language-specific NPI properties.

6.2 Manner implicature effects

If this proposal is to be believed, fixed-point ambidirectional contexts are contexts in which negation is semantically unnecessary, or truth-conditionally ineffectual. If this is the case, then expletive negation is a systematic potential instance of manner implicature, which we expect to see whenever a speaker is more verbose than they strictly-speaking need to be (Grice, 1975; Horn, 1991). Rett (2015c, 2020b) – who investigates manner implicatures in negative antonym constructions, like the equative *as short* – argues that manner implicatures mark that a given situation is atypical (atypical wording marks atypical meaning). Because conversational implicature is by definition calculable, the precise nature of the atypicality can be determined from the source of the markedness. In a sentence like *Larry is not inattentive* – which can be construed as meaning that Larry is only slightly attentive – the implicature 'this is an atypical case of attentiveness' can be attributed to the litote *not inattentive* (Horn, 1991). To summarize, if expletive negation is optional marking that does not meaningfully change the truth-conditions of a sentence, we would expect to see it trigger additional semantic restrictions at a systematic but subtle pragmatic level.

And this is, in fact, what we see. Across expletive negation constructions, there is a consistent report of subtle and systematically variable meaning differences. The meaning differences vary, as we would expect, depending on the construction (and, therefore, on the sort of semantic argument being negated).

There is a general consensus, across constructions, that expletive negations signal (in contrast to their non-negated counterparts) that "there is a bit of uncertainty or indefiniteness" (Napoli and Nespor, 1976, 64) or that the speaker is distancing themself from the truth or likelihood of the embedded proposition (Yoon, 2022). This has been reported for comparatives in Italian (83)–(84) or negative verbs in Korean (85), and lead Yoon (2022) to analyze expletive negation as explicitly encoding negative anticipation.

(83) A: Mary continued to say stupid things. She's really an idiot, you know?
B: But you're wrong! I know Mary very well and she's...
a. ...più intelligente di quanto tu credi.
more intelligent than what you think.2SG

'more intelligent than you think.'

b. ??...più intelligente di quanto tu non creda.
more intelligent than what you NEG think.2SG.SUBJ
'more intelligent than you think.'

(84) A: I didn't understand this last lesson, but I don't believe it's worth the trouble to ask Mary for help.
B: As I see it, you're making a mistake, you should ask her. Mary is...

a. ?...più intelligente di quanto tu credi.
more intelligent than what you think.2SG
'more intelligent than you think.'

b. ...più intelligente di quanto tu non creda.
more intelligent than what you NEG think.2SG.SUBJ
'more intelligent than you think.' *Italian* (Napoli and Nespor, 1976, 63)

(85) John-un Mary-ka oci-anh-ul-ci kekcengha-koissta.
J-TOP M-NOM come-NEG-FUT-COMP fear-ASP
'John hopes/fears that Mary might come (although it is unlikely to happen).' *Korean* (Yoon, 2022, 609)

As with expletive negation in negative verbs and comparatives, expletive negation in 'since' constructions has been reported to carry additional meaning signaling that the embedded event is improbable, undesirable, or unlikely (Yoon, 2011). For instance, (86) is reported as carrying the meaning that not taking a shower is more undesirable than taking a shower.

(86) Nay-ka syawe-lul an ha-nci cham olay toyessta.
INOM shower-ACC NEG do-since very long.time became
'It has been a very long time since I took a shower.' *Korean* (Cépeda, 2018, 165)

Eilam (2009) reports that expletive negation in Hebrew relative clauses – which is a context for expletive negation not reported in Jin and Koenig (2021), and not observed in any other language, as far as I can tell – has a domain-widening effect, equivalent to the addition of *ever* in *whatever* relatives in English.

(87) ma še-dani (lo) katav hitparsem ba-iton.
what that-D NEG wrote was.published in.the-newspaper
'What(ever) Danny wrote was published in the newspaper.' *Modern Hebrew* (Eilam, 2009, 40)

In the case of scalar relations, we see an atypicality implicature that is more scalar in nature. First, Cépeda (2018) argues that positive-antonym equatives without expletive negation are not evaluative (i.e., do not entail that the subject is tall, for a sentence like *as tall as*), but those with expletive negation are.

(88) C'est une recherche qui est aussi importante que (ne) l'est le séro-diagnostic.
it.is a research that is as important as NEG it.is the serodiagnosis
'It is a research that is as important as serodiagnosis.' *French* (Cépeda, 2018, 201)

She says (p201), "These sentences are informative because they assert that, in a relevant scale, both the correlate and the standard scale reach the same degree to be considered... *important*. However, the correlate reaches an even higher degree in the relevant scale, [one] that the standard does *not* reach. One more time, this suggests that the presence of [expletive negation] in the degree domain may be related to an evaluative interpretation." Evaluativity is a prime example of a manner implicature in the degree domain, as argued in Rett (2015c); it is, for instance, a property of negative-antonym equatives like *It is a research that is as unimportant as serodiagnosis*, which is predicted by this approach, given that it characterizes the embedded argument of a degree relation with expletive negation on par with one formed with a negative-antonym.

Second, Krifka (2010b) and Cépeda (2018) observe a subtle meaning difference between a 'before' construction like (89a) and its negated version in (89b): the negated version positions *A* significantly before *B*:

(89) a. Olga mangera son déjuner avent que Dani regarde la télé.
O will.eat her lunch before that D watch.SUBJ the TV
'Olga will have lunch before she watches TV.'

b. Olga mangera son déjuner avent que Dani ne regarde la télé.
O will.eat her lunch before that D NEG watch.SUBJ the TV
'Olga will have lunch well before she watches TV.' *French* (Cépeda, 2018, 134)

Cépeda accounts for this via attenuation to the requirement she claims that expletive negation puts on the overlap of temporal relations: namely, if expletive negation is only licensed when a temporal relation allows overlap between its interval arguments, then such constructions require that the precedence relation avoids the overlap, putting the timing of A farther away from the timing of B than would be required in a non-negated construction.

For the present proposal, 'before' doesn't require temporal overlap. The claim here is that the licensing of expletive negation has to do with something adjacent to, but importantly distinct from, overlap as encoded by temporal relations. But this additional meaning – that the precedence relation between the two events is an atypical one, and thereby a significant one, just evaluativity – is a clear candidate for a manner implicature. In most standard pragmatic frameworks, given the present proposal, it would be more surprising if we didn't observe subtle meaning differences in expletive negation constructions.[25]

7 Conclusions and future extensions

The main claim of this paper is that, when you look at the distribution of expletive negation across languages, the relevant constructions are divisible into two different types: cases where expletive negation is high, and seems to not impact the truth-conditions of the sentence, arguably because it's targeting non-truth-conditional content. And cases where expletive negation is low, and seems to target truth-conditional content ineffectually. I have called environments that seem to be roughly ambiguous between one meaning and its opposite 'semantically ambivalent'. But there are just a few kinds of semantic ambivalence that license expletive negation: constructions that are ambiguous within a given context, not just across contexts.

I've focused on a particular kind of construction that systematically exhibits this property, called fixed-point ambidirectionality: scalar relations, or at least certain kinds of scalar relations. Scalar relations denote relations between intervals qua strictly-linearly-ordered pluralities. Degree relations – like comparatives and equatives – are a subtype of scalar relations, as are temporal relations. Cépeda (2018) was the first to attempt to correlate expletive negation and scalarity; I follow her lead but differ in emphasizing the role of ambidirectionality: a construction $R(B)$ is fixed-point ambidirectional iff it is equivalent to $R(\neg B)$ because B and $\neg B$ share an informative bound (and R relates informative bounds).

Straightforwardly, given what we know about antonymy, comparatives and equatives are both ambidirectional: they relate some point in their matrix-argument interval to the most informative point, construed in the context of the relevant relation, in their embedded-argument interval. And we see expletive negation licensed in comparatives, where languages employ this relation for the sake of comparison, and to a lesser extent equatives. In terms of temporal relations: based on independently observed interaction effects between 'before' and 'after' and telicity, 'before' exhibits ambidirectionality, but 'after' does not, which also accurately tracks the licensing of expletive negation across languages.

As with all of the other semantically ambivalent constructions discussed here, there remains the issue of explaining why not all languages with these constructions allow expletive negation in them (e.g. English has the right sort of comparative and the right sort of *wh*-exclamative, but does not license expletive negation in either). But there are promising avenues of explanation here, involving independently-observable language-specific differences in the formation of degree relatives and patterns of coercion.

I have addressed the fact that high expletive negation seems to be a separate phenomenon; I have separate work arguing that that, too, involves standard negation (AUTHOR *forthcoming*), so there is a sense in which it functions as continuity for the claims made here. But, I argue, high negation is also more like response-particle negation (the *no* in response to a *yes*/*no* question) because it's anaphoric to some prior proposition, so there are many ways in which it differs from the low expletive negation discussed here.

[25] There is a very interesting corollary to all of this: it's been observed that 'after' can sometimes license NPIs, but only if the temporal gap is explicitly modified to require a long lapse of time (Krifka, 2010a):

(i) Joe kept writing poems {many years / ?three years / ??three days} after there was any hope of getting them published.

This highlights a very compelling connection between NPI-licensing and the licensing of expletive negation (and, thereby, a connection to semantic ambivalence) that I unfortunately do not have room to pursue here.

A phenomenon that straddles the two is the licensing of expletive negation under negative verbs, which I introduced in §2.3 but have not addressed formally. I end here with a sort of teaser of how that analysis might go, to illustrate yet another application of the notion of semantic ambivalence, as well as the connection to high expletive negation. Note that we see a lot of cross-linguistic variation with respect to which verbs license expletive negation: just the same sort of variation we see in the licensing of subjunctive mood, which prompted Napoli and Nespor (1976) to argue that the two phenomena are intrinsically related.

There are certain embedding verbs that clearly create a semantically ambivalent context, i.e. a context in which its semantic argument is equivalent to its negation. In many languages, including English, we see this situation under the embedding verb *be not sure*:

(90) a. I'm not sure if I should(n't) see him Monday.
b. Non sono sicura se io (non) debba vederlo lunedì.
NEG be.1SG sure.F if I NEG should.1SG.SUBJ see.3MSG.CL Monday
'I'm not sure if I should(n't) see him Monday.' *Italian* (Napoli and Nespor, 1976, 87)

Intuitively, (90) means the same thing with negation in its embedded CP as it does without: in a situation in which the future possible worlds are split into two subsets A and B, and you're not sure whether you're in Subset A, you're necessarily not sure whether you're in Subset B.

Several things need to conspire to create this sort of semantic environment. As with the discussion of (1), negation seems to play a clear role. But it's an indirect semantic role, rather than a direct syntactic role. If we remove the negation, we get an embedding verb, *be sure*, that is not ambivalent with respect to its argument or its negation.

(91) I'm sure I shouldn't see him Monday.

If I'm sure I shouldn't see him Monday, it's false that I'm sure I shouldn't see him Monday. So removing the embedded negation results in a verb that is extremely biased towards its argument's denotation. This is to be expected given the observation that most verbs are biased, to some extent, towards their argument.

Note that *be sure* is CP-embedding, but *not be sure* embeds a question. When the argument is a question, the verb can no longer presuppose the truth of its argument (because its argument is a question, neither true nor false). So we expect that negative verbs that license expletive negation are more likely to do so in their question-embedding forms than their proposition-embedding forms. *Forget* – which is another responsive predicate, able to take either a proposition or question as its argument – illustrates this too.

(92) a. Chris forgets whether Maria is a phonologist. ↔ Chris forgets whether Maria isn't a phonologist.
b. Chris forgets that Maria is a phonologist. ↮ Chris forgets that Maria isn't a phonologist.

The two sentences in (92b) fail to be equivalent because the embedding verb, *forget*, is factive in its proposition-taking form. As a result, the two sentences carry opposing presuppositions, both of which cannot be satisfied in a single context. The same scenario holds for the verb *worry*.

(93) a. Gillian worries whether Lucas will make it home OK. ↔ Gillian worries whether Lucas won't make it home OK.
b. Gillian worries that Lucas didn't make it home OK. ↮ Gillian worries that Lucas made it home OK.

The negated sentence in (93a) (*wonders whether Lucas won't make it home*) seems to highlight the possibility that he won't make it home OK, which is in keeping with what we know about the role of negation in highlighting possibilities (Romero and Han, 2004; Roelofsen and van Gool, 2010). Because this isn't encoded at the truth-conditional level, we still see mutual entailment between one form and its negated version. But we see some residual semantic differences between the two sentences at the non-truth-conditional level (i.e., the negated version seems to highlight the possibility that Lucas won't make it home OK).

In sum, there are a lot of verbs that license expletive negation this section hasn't addressed: those that only take propositions as arguments (e.g. *deny, hide, regret*), and those that take DPs as arguments (e.g. *beware, forbid, prohibit, refuse*). But I hope this section serves as a proof of concept that at the idea of semantic ambivalence can be extended to at least some cases of expletive negation under negative verbs, and some idea of the sort of explanation that would bring these verbs into line with others. The observed cross-linguistic correlation between

these instances of negation and subjunctivity (Romero, 2015) could also help explain why we see variation in licensing across languages despite this semantic explanation of expletive negation (as argued explicitly in Napoli and Nespor, 1976, for comparatives).

word count: 17,142

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