Linguist and Philos (2009) 31:671–724
DOI 10.1007/s10988-009-9052-7

RESEARCH ARTICLE

What man does

Elin McCready

Published online: 21 April 2009

Abstract This paper considers the meaning and use of the English particle *man*. It is shown that the particle does quite different things when it appears in sentence-initial and sentence-final position; the first use involves expression of an emotional attitude as well as, on a particular intonation, intensification; this use is analyzed using a semantics for degree predicates along with a separate dimension for the expressive aspect. Further restrictions on modification with the sentence-initial particle involving monotonicity and evidence are introduced and analyzed. The sentence-final use can be viewed as strengthening the action performed by the sentence. A formal semantics is given by making use of dynamic techniques and, in a sense, dynamically simulating the modification of certain speech acts. Some empirical and theoretical extensions of the analyses are proposed and some consequences discussed.

Keywords Particles · Degrees · Intensification · Definiteness · Evidentiality · Acquaintance · Dynamic semantics · Speech acts · Modal subordination · Expressive content · Conventional implicature

1 Introduction

The semantics of particles is complex. By particles I mean elements that are syntactically both optional and simple: examples discussed in the (formal) semantic literature include German *ja* and *wohl*, English *like*, and Japanese *yo* and *ne*. Each of these particles seems to do something quite different, in the sense that they not only

E. McCready (✉)
Department of English, Aoyama Gakuin University,
4-4-25 Shibuya, Shibuya-ku, Tokyo 150-8366, Japan
e-mail: mccready@cl.aoyama.ac.jp

have different meanings but quite heterogeneous *kinds* of meanings. Here are two examples to give the flavor of the phenomena. First, German *ja*, which marks information that the addressee can be assumed already to know, and is ungrammatical or at least infelicitous otherwise (Kratzer 1999; Kaufmann 2004). The meaning of this particle can therefore be taken to be, at least in some sense, pragmatic; it is concerned with the information possessed by participants in a given conversation.

(1) Du hast ja'n Loch im Ärmel
You have JA'a hole in+the sleeve
'There is a hole in your sleeve.' (Kratzer 1999)

English *like* presents a quite different picture. It 'makes fuzzy' or 'slackens' the denotation of the syntactic object adjacent to it, according to Siegel (2002), who has analyzed this effect in terms of the 'pragmatic halos' of Lasersohn (1999). In contrast with the case of *ja*, this meaning is more or less purely semantic. Indeed, Siegel shows that *like* can have effects on such obviously semantic restrictions as those associated with the definiteness effect in *there*-constructions. An example is given in (2). While (2b) is bad, as expected given the fact that *every* is a strong quantifier, (2c) is apparently as good as (2a) for speakers of this dialect, which shows the 'fuzzying' effect of the particle.[1]

(2) a. There is a book on the bed.
b. *There is every book under the bed.
c. There is, like, every book under the bed.

It is already clear that the particles are various in nature. What may be less clear is that the question of how particle meanings should be characterized is still very much up in the air. Take, for instance, the case of *ja*. Kratzer (1999) analyzes it in terms of presuppositions, Kaufmann (2004) using a dynamic modal logic, Potts (2005) in terms of conventional implicatures. Which analysis is most desirable remains unobvious, both in a theoretical and an empirical sense. In this paper I intend to further complicate the picture. I will examine the English particle *man* in some detail. As we will see, this particle has two entirely distinct uses, one of which has semantic effects, while the other is pragmatic in the informational sense in which the term was used above. We will also see, however, that both uses, including the pragmatic one, are intimately related with content of the kind more usually associated with pure semantics, and that the more semantic use also has many aspects that might be characterized as pragmatic.

The plan of the paper is as follows. In the next section I will consider the first, semantic, use of *man*; here the particle appears sentence-initially, as in (3).

[1] These judgements come from Siegel (2002). Some speakers appear not to get the contrast, but my informants generally confirm them.

(3) Man, it's hot.

I show that *man* in this position has two distinct uses distinguished by intonation. The first simply expresses speaker attitudes toward the proposition denoted by the sentence *man* appears in; the second, in addition to this function, also intensifies some gradable predicate deeper inside the sentence. However, this modification is not completely freely available, but rather exhibits a variety of restrictions which I argue to be the result of two requirements: first, that the expressive modification yield a strengthened meaning, which amounts to a monotonicity requirement, and second, a need for acquaintance with a truth maker for the strengthened content, generalized to a general notion of evidence. I propose an analysis that covers these cases, making use of a standard degree semantics for gradable predicates (Kennedy 1999) for the second use, and expressive content (Kaplan 1999; Potts 2007) for both. The restrictions are analyzed via a notion of evidential justification and a requirement for upward monotonic environments.

Section 3 turns to the other use of *man*, which arises when the particle appears sentence-finally, as in (4).

(4) It's hot, man.

Here its effect is quite different. *Man* on this use serves to *strengthen* the speech act performed by use of the sentence. This loose talk of speech acts is a bit misleading: the analysis I adopt does not make explicit use of speech acts, but instead gives a kind of simulation of their effects using dynamic semantics. The resulting analysis is then related to a clear semantic effect of the particle; it is able to license modal subordination, a surprising fact. I argue that both meanings shown by the particle follow from its function as a coherence maximizer, in the sense that it serves to repair discourse-level infelicities. Throughout this section I make connections with particles in other languages.

The next section, Sect. 4, attempts to show in what sense the two uses are related. Can we think of sentence-initial and sentence-final *man* as having the same, or even similar, semantics? Given the data in Sects. 2 and 3, I think the answer to this question must be that we cannot; but this does not mean that there is no relationship to be found. I will suggest that the general notion is one of emphasis or strengthening, acting in the one case on the truth conditions of the sentence containing the particle, and in the other on its discourse function. This section, and the paper, conclude with a brief discussion of some implications of the analysis and of the general picture.

Before going on, some discussion about methodology is in order. As may already be clear to the reader, the phenomena to be considered can be found (essentially) only in informal speech, and further only in the speech of some dialects of English.[2] The use of *man* is also dependent on register. Because of these factors, it may be difficult for some readers to directly consult their intuitions, possibly leading to worries about the reliability of the data. However, the data has been checked with fairly large numbers of speakers, though I have not done formal surveys or

[2] More discussion on the distribution of particles like *man* can be found in e.g. Kiesling (2004).

examined corpora. At this point nearly every speaker of the relevant dialects whose intuitions I have consulted has confirmed the judgements in this paper (and, in most cases, found them crisp). This group includes naive informants and trained linguists. The data, then, appears to be solid. I will, however, try to make things as clear as possible by providing discourse contexts where the facts are subtle.

With this point settled, let us proceed to the first case, the sentence-initial use of the particle.

2 Sentence-initial uses

This section considers sentence-initial uses of *man*. I begin in Sect. 2.1 with data that allows us to get a grip on the lexical semantics of the particle. As we will see, there are two distinct uses distinguished by intonation, both of which involve emotional attitudes. The second use in addition acts as an intensifier on gradable predicates elsewhere in the sentence, something like a long-distance *very*. Both operate at the level of expressive content. Section 2.2 provides an analysis of this lexical content in terms of expressive content, for both uses, and quantification over degrees, for the second use. Section 2.3 introduces more complex data showing that several factors, including the type of speech act used and some entailment properties of the context together with a notion of acquaintance, play a role in restricting what gradable predicates *man* (on its second use) can modify. Section 2.4 proposes an analysis making use of a monotonicity requirement together with an evidential restriction describing the required acquaintance relation. 2.5 sums up the section, discusses a further case in which modification is impossible, and indicates what is required for a proper analysis.

2.1 Some initial data

Before starting on the main project of determining what sentence-initial *man* means, it will be useful to immediately clarify which uses of the particle I will discuss. There are four possibilities; I will consider only two in detail, though I will have something to say about the other two as well. I will primarily analyze sentence-initial uses of *man* on which it appears modifying a sentence, which I will call its *host sentence*. With this decision, two uses of *man* are put aside. The first is the vocative use, on which the particle serves to indicate who is being addressed by the sentence.

(5) Man, I'm talking to you.

On the uses we are interested in, *man* is not a vocative, but a true modifier. There are two pieces of support for this claim. The first is that it is perfectly fine to use sentence-initial *man* in monologue on its modifier interpretation.[3] If the particle was vocative in nature, it would require an addressee to be usable. Second, we need simply observe that the vocative use of the particle does not modify the sentence

[3] Here it differs from sentence-final *man*, which, nonetheless, is also not a vocative, but is not usable in monologue simply because of its semantics.

itself at all: it only indicates who the speaker means to talk to. The second use that I will put more or less aside is the use of the particle in which it appears without a host sentence; this use will be discussed shortly.

On the first use I will be concerned with, *man* is essentially a propositional operator applying to the content of its host sentence. This is already different from *like*, which, as we saw already, must be analyzed as being of polymorphic type, because it can apply to objects of a variety of different semantic types; but it is similar to *ja* and the other German particles, which indicate something about the status of the information of the whole sentence. Now, the first thing to note about sentence-initial *man* is that it has the effect of expressing some emotional attitude of the speaker toward the content in its scope. Exactly what this attitude is is not determined by the particle itself. Consider the following examples.

(6) Positive
   a. Man, I got an A on my calculus test!!

(7) Negative
   a. Man, I wrecked my car this morning.

Here, it seems that the propositional content of the sentence dictates what interpretation is taken, positive or negative. When the content is something that is ordinarily understood as positive—such as getting an A on a test—*man* expresses a positive emotion. When the content is negative, the opposite holds. Note though that this is a default. The attitude expressed also depends on other factors, as we will see in a moment.

The reader may now wonder: what is the status of this observation? After all, surely the content of these sentences is understood as positive or negative without the particle! This is true, of course. But it misses the point slightly. What the particle does is make this emotion into a true part of the sentence meaning, by making it overt in the logical form. The attitudinal content is no longer implicit. The speaker, by using the particle, indicates to the hearer that she recognizes the positivity or negativity of the fact in question, and further that she holds the relevant attitude to it. Thus, sentence-initial use of *man* ensures that the hearer understands that the speaker has made the relevant judgement.

Note that it *is* the speaker's judgement that is important. Consider:

(8) Man, George Bush won again.

Whether this attitude is understood as positive or negative is completely dependent on who utters the sentence. Suppose it is uttered (in 2004) by a deep Republican supporter. Use of *man* by such a speaker indicates that a positive attitude is held. But if the speaker is a rabid Democrat, the attitude in question will be understood as negative.

There are still other factors that can influence the interpretation of *man*. We have seen already that sentence-initial *man* is speaker- and content-dependent. As it turns out, it is also world-dependent:

(9) Man, I just won the lottery!

(10) a. Scenario A: One Million Dollars!
b. Scenario B: Shirley Jackson scenario (Jackson 1948): death by stoning.

On scenario A, the hearer will understand the expressed emotion as positive, and on scenario B, as negative, given the relevant knowledge.[4] This illustrates that the content also varies depending on the world of evaluation. And this observation, taken together with the preceding one about speaker-dependence, shows further that the content-dependence discussed in conjunction with (6) and (7) is strictly a default.

In fact, the interpretation of *man* is similar when it appears by itself. This is the second use that I will not concern myself much with in this paper.

(11) Man!

Utterances like this one can be taken to express the speaker's attitude to some contextually relevant proposition, whether introduced in the discourse (and hence anaphorically available) or simply present in the non-linguistic context. I will not explicitly analyze such examples in this paper, but the analysis I will give applies directly to these cases as well, when taken together with some means for determining what the proposition in question is. It is also worth noting that, as a result of my decision not to take up this use of *man*, I will consider only instances where *man* appears with declarative sentences. In instances where it appears with (e.g.) questions or imperatives, it does not actually modify their content.

(12) Man, did you go or not?

(13) Man, go out there and get it done!

Here, the emotional content of the particle intuitively is applied, not to the content of the sentence it appears with, but to some other salient proposition: e.g. 'The speaker is not answering my question!'.[5] (A vocative interpretation is, of course, also available.) Cases like these, while interesting, are not really crucial for determining exactly what *man* means, if I am correct in thinking that the analysis I will give in the next section applies to them in the way outlined above.

We have now seen how the emotionally expressive part of *man*'s meaning works. Let us move on to intonation. The crucial point is that the particle can appear with two different intonational patterns in terms of integration into the sentence. On the first, which is what we have been considering up to now, the particle is separated

[4] The determination of what is intended here depends on the hearer recognizing the intentions of the speaker, and this in turn depends on the hearer's knowledge of certain aspects of the speaker's mental state and of the world, and on knowledge about norms of communication. I will not consider these issues in the present paper.

[5] This is clearly related to the side effects of speech acts discussed in Sect. 3.

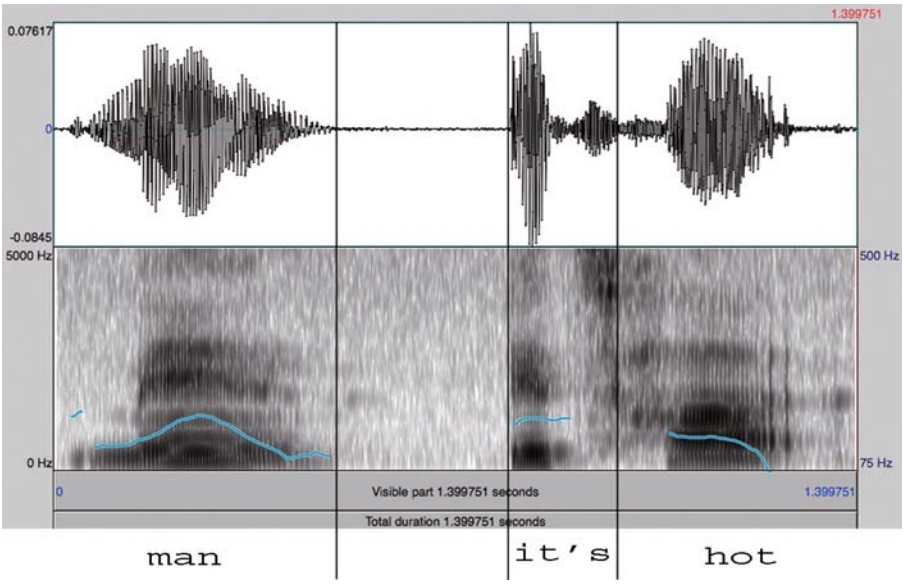

Fig. 1 'Man, it's hot' with comma intonation; spectrogram produced in Praat. Note the pause between the particle and the host sentence

from the rest of the sentence by a pause, which is merely to say that it appears in a separate intonational phrase. For those familiar with the ToBI system for transcribing intonational patterns (see e.g. Pierrehumbert and Beckman 1988; Pierrehumbert and Hirschberg 1990), this indicates the presence of a boundary tone % after the particle. An example of this intonational pattern analyzed in Praat (Boersma and Weenink 2008) can be seen in Fig. 1. I will call this pattern *comma intonation* in what follows. I will also use the term *stand-alone use* for this intonational pattern, as on this intonation the particle 'stands alone' as if would if pronounced if separated from the host sentence by a comma.

On the second pattern, *man* is intonationally integrated into the sentence, so there is no comma-like break between the particle and its host sentence and no % boundary tone. I will call this pattern *integrated intonation.*[6] An example of this pattern analyzed in Praat can be found in Fig. 2. As the reader will note, there is no comma-like pause between the host sentence and the particle. In the examples in this paper, I will indicate integrated *man* by eliminating the comma between the particle and its host sentence when the sentence should be read with integrated intonation.

An initial point of interest is that integrated intonation cannot be used with every (declarative) host sentence, while, it appears, comma intonation can. In (14a), a

[6] When there is no boundary tone, the pitch of the particle often rises slightly, the intensity rises, and the duration drops. However, none of these effects appear in every case in which a boundary tone is lacking on the particle, and so are not strictly speaking necessary.

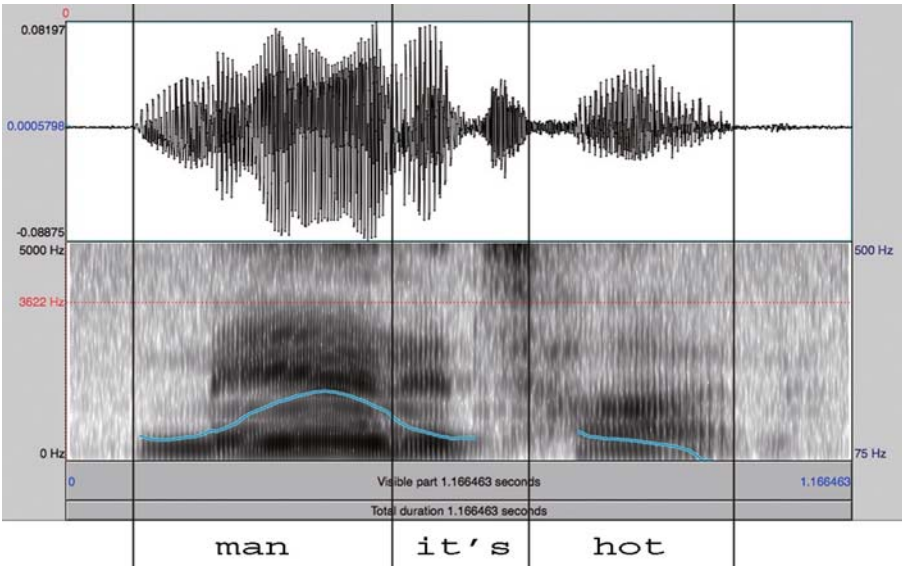

Fig. 2 'Man it's hot' with integrated intonation; spectrogram produced in Praat. Note the lack of any pause between particle and host

boundary tone can be associated with the particle, or not; in (14b), a boundary tone must be present, or the sentence becomes very odd.

(14) a. Man(,) this water is hot! (comma or integrated)
b. Man #(,) John came to the party last night. (comma only)

What is the source of this difference? Let us consider some additional examples, which may make the point clearer.

(15) OK with both intonational patterns:
a. Man(,) it's hot.
b. Man(,) that's a cool shirt.
c. Man(,) that movie was boring.

(16) Bad with integrated intonation:
a. Man #(,) over 70,000 people were killed by the tsunami in Asia.
b. Man #(,) George Bush was reelected.
c. Man #(,) this table is perfectly square.

What do these examples have in common? It is simple: the host sentences in (15) all contain gradable predicates. It appears that the presence of a gradable predicate is necessary for integrated intonation to be used.

Given the examples provided, the reader may wonder whether the problem does not lie in the gradability of the predicate, but rather in the phonological weight of

the sentences in question. Perhaps *man* simply is hard to integrate into the sentences in (16) because of their length.[7] This idea does seem reasonable. To check whether it is correct, we can consider 'heavier' sentences containing gradable predicates, and 'lighter' sentences that are not gradable. If the pattern remains the same as seen in (15) and (16), then it cannot be phonological weight that is at issue.

(17) Heavy but gradable:
Man those shoes you're wearing are ridiculous. (Integrated OK)

(18) Light but binary:
Man #(,) the light's on. (Comma only)

So it does seem that gradability is necessary for integrated intonation, rather than phonological lightness.

Why should this be the case? To understand what is going on, we must consider what the particle means when it appears with integrated intonation. When integrated intonation is used, the sentence expresses not only that the speaker has some attitude to the content, but also that whatever the gradable predicate is holds to a high degree; so e.g. (14a) with integrated intonation indicates that the water is extremely hot. In contrast, the host sentences in (16) do not include gradable predicates: they simply describe facts. *Man* with comma intonation simply indicates that the speaker holds some attitude toward that fact. (14a) with comma intonation thus indicates that the water is hot, and that the speaker has some attitude toward this fact; but nothing about the degree of heat of the water is indicated beyond its being sufficient to qualify as 'hot'. Thus it makes sense that integrated intonation should be impossible when there is no gradable predicate. Using *man* in this way would be like applying an intensifier like *very* to a nongradable predicate:

(19) a. *Over 70,000 people were very killed by the tsunami in Asia.
b. *This table is very perfectly square.

From this we should conclude that *man* has two distinct semantic contents, one which appears when it is used with integrated intonation and one which appears when it is phonologically separate.

It is easy, however, to find examples that look problematic for the generalization just stated. For instance, the following examples describe past events (facts) and are not obviously gradable (when compared to predicates like *long* or *red*, at least); nonetheless, integrated intonation is fine with them.

[7] This point was raised by an anonymous reviewer, and independently by Jessica Rett (p.c.), who pointed out a possible connection to inversion with exclamatives:

i. (Boy,) Is George (ever) annoying!
ii. ? (Boy,) Is the current President of the United States (ever) annoying!

(ii) is bad for many speakers (though I personally find it acceptable). It seems to be improved by deaccenting the intervening material. This connection is interesting to note and suggestive in light of other similarities *man* has to exclamatives, which will be pointed out later.

(20) a. Man we drank beer last night.
b. Man Mugabe won the election.

However, when one considers the interpretation of the sentences the generalization can be seen to hold after all. (20a) means that we drank *a lot* of beer last night; (20b) means that Mugabe *really* won the election, for instance by a vast margin. However, these interpretations only arise when *man* is phonologically integrated with the host sentence. Thus we seem to get coercion of *drink beer* and *win the election* into something gradable when integrated intonation is used. Not so when we use comma intonation, however; in this case, the particle merely comments on the fact expressed by the host sentence. Examples like these therefore ultimately support the generalization that integrated *man* requires a gradable predicate.

Note though that the mere presence of a gradable predicate is not enough. To anticipate the analysis a bit, the gradable predicate must retain the ability to have its degree argument modified. Consider superlative constructions, where the degree is in a sense definite; it is *the highest* relevant degree on the scale corresponding to the predicate. Consequently further modification of the degree is impossible; the same holds for modification by integrated *man*.

(21) *That's the very bluest shirt I've ever seen.

(22) Man, that's the bluest shirt I've ever seen. (comma only)

Here the use of a superlative precludes degree modification, because the predicate is in a sense no longer gradable. Note though that (21) may not be so bad on a somewhat irrelevant reading where *very* does not directly modify the degree of blueness, but (very roughly) indicates something about the speaker's attitude toward the blueness of the shirt, which is just to say that *very* does not have the same effect here that it does in ordinary situations of modification, as with *a very blue shirt*. I take this kind of case to be orthogonal to present concerns, though the fact that the same phenomenon arises with exclamatives (Jessica Rett, p.c.), as in (23), indicates a connection between the two to be explored further below (see also footnote 7).

(23) Isn't that just the bluest shirt ever!

Let us now turn to providing a semantics for the particle that captures the facts discussed in this section.[8]

[8] The reader might think that there is more to the semantics than this. For instance, a plausible candidate for inclusion in the semantics of *man* is a notion of surprise or unexpectedness of the proposition modified (as, again, with exclamatives). But it would be a mistake to actually build this into the semantics (notwithstanding what I have done in earlier work, cf. McCready 2006a). I could perfectly say the following while working in the hot Texas summer sun.

i. Man it's hot.

But surely there is nothing unexpected about the Texas summer being unbearably hot. The intuition that *man* also expresses surprise must be default. I suppose it to follow from the following reasoning: the speaker expressed a strong emotion about this content. Why would she do so if it was expected? It therefore must be unexpected. This will not always go through. In the case of (i) it is clear that the speaker may have strong attitudes about the heat despite its being inevitable.

2.2 Analysis 1: basic lexical semantics

I will proceed by separating the two uses of *man*. I begin with the stand-alone use in Sect. 2.2.1. I then move to the integrated use in 2.2.2, where we will make use of the insights gained in the analysis of the stand-alone use.

2.2.1 Stand-alone use

The first step toward an analysis of the stand-alone use of *man* is finding a way to introduce the emotional expression component. Recall that what emotion is expressed by the particle depends on the content of the sentence that hosts it, the speaker of that sentence, and the circumstances that hold in the world of evaluation. Accordingly, I will define a function from Kaplanian contexts (Kaplan 1989) to emotional predicates. We first define contexts. Here I take into account only those contextual elements that appear relevant to particle interpretation. If more prove to be needed, they are easily added.

(24) A context is a tuple $c = \langle c_A, c_T, c_W, c_P \rangle$, where
c_A is the agent of c,
c_T is the time of c,
c_W is the world of c,
and c_P is the place of c.

We next define the needed function: one that maps contexts to functions from propositions to emotional predicates.

(25) $E : c \mapsto (\wp(W) \mapsto A)$, where $A \in \{\mathbf{bad}, \mathbf{good}\}$.

Here **bad, good** are of type $\langle\langle s, t\rangle, t\rangle$: functions from propositions into truth-values. Thus E maps contexts to functions from propositions into emotion-describing predicates of propositions. I make use only of the predicates **bad** and **good**, which are relatively coarse-grained. They are interpreted as follows.

(26) a. $\mathbf{bad}(p) = 1$ iff the speaker has a negative feeling toward p
b. $\mathbf{good}(p) = 1$ iff the speaker has a positive feeling toward p

It would also be possible to make finer distinctions between emotional states, for instance by using Potts' recent (2007) proposal, according to which emotional content is realized as part of a real-numbered interval. There are other advantages to this proposal, but I think that for present purposes it is an unnecessary complication of what will prove to be an already complicated analysis.

Armed with this definition, we can make an initial attempt at a semantics for sentence-initial *man* as follows.

(27) $[\![man]\!] = \lambda p.[p \wedge E(c)(p)(p)]$

This looks initially more or less correct. The duplication of content (p together with $E(c)(p)(p)$) is made in order to ensure that p holds in addition to the emotional predicate (which surely need not be veridical). This is inelegant, and in fact we have independent reasons to revise it. As Anna Verbuk (p.c.) pointed out to me, the content introduced by *man* cannot be targeted by denial, cf. (28).

(28) a. A: Man, John didn't come to the party.
b. B: No, that's not true.

B's utterance can mean that John did in fact come. But it can't mean that John's not coming to the party was not good or bad. What is the reason for this fact?

The answer to this question can be found in the previous section. I used the phrase 'expresses an emotional attitude to the content of its host sentence' in connection with the description of *man*. In fact, this characterization seems to be exactly right: the content introduced by *man* is expressive in nature.

What is expressive content? Kaplan (1999) provides an answer: that content that is not true or false, but is appropriately used or not depending on the situation of utterance. Potts (2007) elaborates on his definition, proposing the following features as identifying expressive content:

(29) a. Independence: Expressive content contributes meaning to a dimension separate to that of at-issue content.
b. Nondisplaceability: Expressives predicate something of the utterance situation.
c. Perspective dependence: Expressive content is evaluated from someone's perspective, usually the speaker's.
d. Descriptive ineffability: Nonexpressive terms do not satisfyingly paraphrase expressive terms.
e. Immediacy: Expressives achieve their communicative intention simply through utterance.
f. Repeatability: Repetition increases the effect of the expressive item.

How does *man* stack up here? Condition (a) does in fact seem to hold, given the denial facts above and the assumption (made by a variety of authors including Potts 2005) that direct denial only applies to at-issue semantic content. Condition (b) holds of sentence-initial *man* as well: any use of *man* says something about the speaker's feelings *at the present time*. I have already argued that condition (c) holds in the previous section. The status of condition (d) is not so clear; arguably, it is difficult to find a satisfying paraphrase, but the same may hold of other non-expressive words as well, as noted by Geurts (2007).[9] I therefore put this condition aside. Mere use of *man* is sufficient to indicate that the speaker has the attitude in question, as also argued in the previous section; so condition (e) is also satisfied.

[9] 20th century analytic philosophy teaches the same lesson, cf. Fodor (2002).

Condition (f) is inapplicable as it is rather odd to repeat the particle. Based on all this, I think that the evidence is sufficient to conclude that the content introduced by sentence-initial *man* is expressive in nature.[10]

To analyze the expressive content introduced by *man*, I will make use of the theory of conventional implicature of Potts (2005).[11] On the Potts theory, content comes in two types: at-issue and conventionally implicated. Expressive content is subsumed under this latter type. This talk of types is more literal than it might seem: the two kinds of content are realized in the logical theory as two distinct *syntactic* types, which combine and are evaluated in different ways. At-issue types, of the form τ^a, a for 'at-issue', behave as usual in type-theoretical semantics. Conventionally implicated (CI) types, syntactically distinguished with a superscript 'c', applies to at-issue content as indicated in the following schema (where $\bullet$ indicates that the two pieces of content are both present on the node):

$$(30)\quad \frac{\alpha : \sigma^a \quad \beta : \langle \sigma^a, \tau^c \rangle}{\alpha : \sigma^a \bullet \beta(\alpha) : \tau^c}$$

The resulting pair is interpreted in a way that 'splits' the at-issue and CI content.

$$(31)\quad [\alpha : \sigma^a \bullet \beta : \tau^c]^{M,g} = \langle [\alpha : \sigma^a]^{M,g}, [\beta : \tau^c]^{M,g} \rangle$$

So conventionally implicated content, and hence expressive content, is put into a separate dimension of meaning from the at-issue content.

Within this theory, it is clear how *man* should be handled: since its contribution is expressive, it should be given a CI type, meaning that its content will be in a dimension distinct from that of at-issue meaning. Doing so makes this content unavailable for direct denials, as desired given what we saw in (28). The revised lexical entry for *man* is thus the following, ignoring intensionality for simplicity:

$$(32)\quad [\![man]\!] = \lambda p.[E(c)(p)(p)] : \langle t^a, t^c \rangle$$

[10] The reader might question this conclusion as follows. We already know that content of certain kinds is speaker-privileged in the sense that only the speaker has direct access to it; such content includes predicates of personal taste (Lasersohn 2005) and other kinds of predicates that involve speaker judgements (Mitchell 1986). (See also Kölbel (2002) for a general discussion and characterization of some other predicates of these kinds.) The reader might therefore ask: if *man* expresses an emotional attitude of the speaker, shouldn't we expect that that content would not be deniable anyway, without making reference to expressive content *per se*?

There is something to this argument. But two points speak against it. First, and most important, not all the content in question is speaker-relative; for instance, the intensifying meaning of integrated *man* is certainly not, though it will also be analyzed as expressive in the next section. Second, making use of the Potts theory here allows a simple and elegant characterization of why all this content is understood as following from the judgements of the speaker; it can be taken as just a direct result of the model theory for Potts' conventional implicature logic $\mathcal{L}_{CI}$.

[11] Again, we could also use the proposals of Potts (2007). But these are complex; it is simpler to do things as I will in the main text. I think the translation to the more recent theory is fairly straightforward in any case. In the Potts theory, emotional attitudes correspond to subintervals of $[-1, 1]$, where -1 is maximally bad and 1 maximally good; **bad** wrt φ could then be defined as having an attitude in the range $[-1, -0.5]$ to φ. The exact interval one should choose is open to debate; further, since the Potts theory allows only for attitudes toward individuals, some tinkering is necessary. In any case, I will not perform this elaboration.

Composition with a sentence with denotation ϕ thus yields (33). All the necessary content remains, but the content of *man* is no longer available as a target for denial, as desired, and further, we have managed to rid ourselves of the unsightly conjunction in the earlier version of the lexical entry.

(33) $\langle \phi, E(c)(\phi)(\phi) \rangle$

The above, I take it, is the basic semantics of stand-alone *man*. We have yet to introduce the integrated use, however. I will turn to integrated uses of *man* in the next section, but first let me briefly summarize. In this section I gave a semantics for stand-alone uses of sentence-initial *man*. We saw that the content of the particle was best understood as expressive; the analysis was therefore couched within the theory of conventional implicature of Potts (2005). In the next section, I will apply the insights gained here to the analysis of integrated uses of sentence-initial *man*. In particular, we will see that the content of *man* on this use is also expressive in nature.

2.2.2 Integrated use

Recall what was said in the last section about the interpretation of sentence-initial *man* on the integrated use. On this use, *man* acts as an intensifier; it applies to a gradable predicate within the host sentence and modifies it to not only be true of an object but to be true of the object to a high degree. Otherwise stated, it behaves much like the intensifier *very*, but differs in that it acts at a distance. To make all this concrete, consider the following example.

(34) Man that shirt is red.

This sentence indicates that the shirt is not only red but *very* red, in addition to the emotional attitude discussed in connection with the stand-alone use of the particle. The integrated use also expresses attitudes of this kind.

In order to analyze this use of *man*, then, we need to retain the results of the previous section, including the emotive content. But we also need an analysis of what being a long-distance intensifier amounts to. Let us turn to this task now.

I will make use of a standard theory of adjectives, one that that takes them to be functions from objects to degrees. Consider the variant of (34) without the particle, in (35). On the theory of adjectives proposed by Kennedy (2007), it has the logical form in (36). This is an extension of Kennedy's earlier theory (Kennedy, 1999), on which it had a different logical form, but one which received a roughly similar interpretation.

(35) That shirt is red.

(36) $[\![(35)]\!] = \mathbf{red}(\mathit{that\_shirt}) \succ s(\mathbf{red})$

In this formula, $s(\mathbf{red})$ refers to a degree which comprises the 'standard' for the property in question, here 'redness'; $s(\mathbf{red})$ thus denotes the degree of redness above which an object can truly be said to be red. Following Kennedy (2007), I take this degree to come from a null degree morpheme, *pos*, which appears with the 'positive form' (noncomparative form) of the adjective. This null morpheme has the lexical content in (37a); here, s is a function from measure functions to degrees that yields a contextual standard. What this function is, and hence the contextual standard it determines, depends on properties of the context and also on properties of the measure function itself, for instance its domain. See Barker (2002) and Kennedy (2007) for extensive discussion. On the other hand, *red* is simply a function from individuals to degrees, as shown in (37b). In the model theory, degrees are treated as points in a scale, modelled as a (dense) total order. Each gradable predicate is associated with a scale.

(37) a. $[\![pos]\!] = \lambda g.\lambda x.[g(x) \succ s(g)]$
b. $[\![red]\!] = \lambda x.[\mathbf{red}(x)]$, where **red** is a function from individuals to degrees of redness

With these definitions, the combinatorics will yield the logical form in (36) for (35). Summarizing, applying the positive morpheme to an adjective yields a function from individuals to truth-values; the truth value is determined by first mapping the individual of which the adjective is predicated to the degree it corresponds to on the scale associated with the adjective, and then checking whether that degree is higher than the contextual standard or not.

How can we apply this to *man*? The crucial thing to note is that $g(x)$ denotes an unbound degree, for any gradable predicate g. This means that it is possible in principle to further specify things about this object by modifying the predicate. It is helpful to modify the lexical entry of *pos* minimally in order to make this easy, as follows:

(38) $[\![pos]\!] = \lambda g.\lambda x.[g(x) = d \wedge d \succ s(g)]$

(39) $[\![(35)]\!] = \mathbf{red}(that\_shirt) = d \wedge d \succ s(red)$

Now the degree d is available for modification in a convenient way.

Why do we want to modify this degree? On a standard analysis of *very* (Klein, 1980), something is *very P* (for gradable predicate *P*) iff the degree of *P* it has is greater than the degree of *P* most other things that are *P* have. Effectively this is a simple modification in the sense that the type of *very P* is the same as the type of *P*. We now want to define *man* in such a way that it can do the same sort of modification, but in a way that doesn't require local access to the predicate to be modified.

This is a real dilemma, though. *Man* needs to access the predicate in order to modify it. But such modification is noncompositional. At first glance, then, we seem

to need a noncompositional analysis. This is *a priori* undesirable. Is there really no way to avoid this?[12]

I think there is a way.[13] What we must do is to take *man* to modify a set of degrees.[14] Doing so will allow us to specify that the degree in question is higher than most other comparable degrees, in just the way the analysis of *very* would have it. Further, it will allow us to analyze some additional restrictions on what predicates can be modified. This point will be further discussed in Sects. 2.3 and 2.4.

In order for this to work, however, we need to make two assumptions. The first is probably more contentious. Since we need *man* to modify a set of degrees, and since sentences otherwise denote propositions, we need a type-shifting operation that takes propositions into sets of degrees. Here I will set aside intensionality and define this operation just for objects of type t. The relevant type-shifter is this one.

(40) $\mathcal{SD} = \lambda p_t.\lambda d.[p(d)]$

$\mathcal{SD}(p)$ thus denotes the set of degrees that satisfy whatever degree predicate is in p, which will be a singleton;[15] if there is not a degree predicate there, the operation will be useless and therefore never apply, given prohibitions against vacuous quantification (von Fintel 1994). Second, we need an operation of existential closure on degree predicates of this sort. Again, this operation will be harmless given that the set in question is always a singleton.

[12] Taking integrated *man* to simply modify exclamatives, so that the degree modification is actually no modification at all, might seem the obvious solution. But this idea comes with difficulties of its own. Sentences modified by *man* and exclamative sentences are not always equivalent. Consider:

(i.) Man it must be raining out there.
(ii.) *How it must be raining out there!
(iii.) It must be raining out there!

(i) asserts that it must be raining out there and conventionally implicates that it must be raining hard; so the particle coerces *raining* to a gradable predicate and modifies that. WH-exclamatives are ungrammatical here, and the movementless exclamative (iii) only indicates something about the speaker's confidence in the modal statement (though this is a rough paraphrase), clearly not about how hard it is raining. Examples like these strike me as presenting serious problems for an approach that takes *man* to merely provide attitudinal content with respect to already existing exclamatives.

[13] Indeed, there are several. One possibility is to combine *man* with the adjective in a nonlocal manner. The 'glue semantics' for lexical-functional grammar (Dalrymple et al. 1997) is one easy way of making this work out. The problem with this approach would be that it is completely unable to derive the restrictions on what integrated *man* can modify (presented in the next subsection) without additional stipulation, e.g. by introducing conditions on what bits of content can combine. I do not know of work in this framework that shows how to set up such conditions in a transparent way. Another way to go would be to make use of movement; for instance, we might assume that *man* on this use is base-generated adjacent to the gradable predicate and then fronted, but is then reconstructed at the LF level of interpretation. However, this movement is otherwise completely unmotivated, and further does not obey well-known restrictions on movement, making such an analysis very implausible. The issue is discussed further in Sect. 2.5.

[14] I thank Hans Kamp for suggesting to me this way of proceeding.

[15] Strictly speaking, it denotes the characteristic function of a set of degrees, not the set itself, again ignoring intensionality. I will allow myself to be sloppy here.

Given this set-up, it is fairly straightforward to define *man*. On the integrated use, it must denote an object of type $\langle\langle d,t\rangle,t\rangle$, i.e. to a function that maps functions from degrees to truth-values, to truth-values. (Again, I ignore intensionality.) This can be provided as follows. Here $very(D,d)$ is defined in order to make the semantics for integrated *man* in (42) more readable.[16]

The idea here is that a degree is 'high' with respect to a gradable predicate D—and thus 'very D'—iff the degree exceeds the contextual standard to an extent that is substantial, though itself contextually determined. The extent that d actually exceeds the standard is defined via the distance function *dist*, and v is a function, similar to s above but yielding an extent rather than a degree, that determines how much a degree must exceed the standard by to count as exceeding it highly.[17]

(41) $very(D,d) = 1$ iff $dist(d, s(D)) > v(D)$, where $dist(x,y) = y - x$ and $v(P)$ is a contextually determined distance

(42) $[\![man_{int}]\!] = \lambda D_{\langle d,t\rangle}[D(d) \wedge very(D,d) \wedge E(c)(D(d) \wedge very(D,d))$
$(D(d) \wedge very(D,d))]$

Note that this semantics corresponds closely in one sense to the initial semantics we gave for stand-alone *man*. It contains both the degree expression itself and a statement about the speaker's emotional attitude toward it, in addition to the statement inducing intensification. It is now natural to wonder whether this is correct. Is some or all of this content actually expressive in nature?

To answer this question, let us turn to the denial test.

(43) a. A: Man that's a red shirt. (integrated)
b. B: No, that's not true.

It seems to me that in this case B's denial means only that the shirt in question is not red. It certainly does not say anything about A's attitudes toward that redness; this is as expected. But it also doesn't say anything about *how red* the shirt is. This point is

[16] It would also have been possible to define $very(D,d)$ as quantifying over possible ways of assigning the contextual standard:

(i) $[\![very(D,d)]\!]^s = 1$ iff $MOST_{s' \in S}(s' \neq s)([\![very(D,d)]\!]^{s'} = 1)$

Here S is a set of salient functions assigning contextual standards. The idea is that something is 'very P' if it is both P and, for most other contextually relevant ways of assigning standards, it satisfies P on them too. I see nothing wrong in principle with this way of proceeding, but the technique in the main text requires fewer assumptions and thus seems conceptually simpler.

[17] It is worth noting that, in certain cases, *man* can modify more than one gradable predicate.

i. Man that's a big red apple!

Here the sentence expresses that the apple is both very large and very red. The current approach may or may not have trouble with such examples, depending on how one analyzes multiple modifications. The potential difficulty is that the bigness of the apple and the redness of the apple correspond formally to distinct degrees (they are not, after all, even on the same scale), and so the current approach, on which only a single degree is abstracted over, may not be able to handle them. I will leave this issue here for the purposes of this paper.

crucial. It indicates that the intensification is expressive. And this in turn means that we must revamp the analysis a bit to reflect this expressive character.[18]

We have already seen in the last section how to do this. We simply manipulate the types so that the semantics given in (42) maps to expressive (conventionally implicated) content, which in turn is mapped to a separate dimension of meaning. We must also ensure that the resulting content is propositional, for reasons (partly) internal to the Potts system. The altered lexical entry looks like this. Note that now the degree variable d in the expressive dimension is unbound; I assume that it is bound from the at-issue dimension, which is known to be possible (cf. Wang et al. 2005). Formally, this can be handled via the cross-dimensional dynamic semantics of Nouwen (2007). I will not make this explicit here.

(44) $[\![man_{int}]\!] = \lambda D_{\langle d,t\rangle}[very(D,d) \wedge E(c)(D(d) \wedge very(D,d))$
$(D(d) \wedge very(D,d))] : \langle\langle d^a, t^a\rangle, t^c\rangle$

Together with the type-shifting operation $\mathcal{SD}$ and an operation of existential closure over degrees, this semantics yields the following logical form for (34).

(45) $\langle \exists d[\mathbf{red}(that\_shirt) = d \wedge d \succ s(\mathbf{red})],$
$\{very(\mathbf{red},d) \wedge E(c)(\exists d[\mathbf{red}(that\_shirt) = d \wedge d \succ s(\mathbf{red}) \wedge very(\mathbf{red},d)])$
$(\exists d[\mathbf{red}(that\_shirt) = d \wedge d \succ s(\mathbf{red}) \wedge very(\mathbf{red},d)])\}\rangle$

In terms of at-issue content, the sentence says only that the shirt is red. In the expressive dimension, however, it says both that the shirt is very red, and that the speaker holds some attitude to this fact (exactly what this attitude is depends on E). This explains why denial cannot target these last two propositions.

It is interesting to note the connection to exclamatives. The interpretations of (46a) and that of (46b) seem quite closely related, given that (46a) is pronounced with integrated intonation.

(46) a. Man John is a smart guy.
b. What a smart guy John is!

In fact, one often finds the inversion characteristic of (English) exclamatives together with the particle, as noted by a reviewer (who suggested the following example).

(47) Man was she ever right!

These considerations suggest that the semantics of the two should be similar, though the particle would lexicalize this content where in the exclamative case it is related to the whole construction. I do not want to commit myself to a semantics for exclamatives in this paper, and so I will not be able to fully explore this connection.[19] Still, it is interesting to note that if it is true that English *man* has an

[18] If my argument is correct, the existence of examples like (20b) indicates that expressive content can also be interpreted in a non-literal (e.g. sarcastic) manner.

[19] Analyses of exclamatives can be found in Zanuttini and Portner (2003), Castroviejo Miró (2006) and Rett (2008).

exclamative-like semantics it is not the only particle to do so. Castroviejo Miró (2006) cites the case of Mandinka, which has a particle *bari* ('but' in other contexts) that can induce an exclamative semantics:

(48) a. Nfanli le beteyaata
Nfanli FOC good
'Nfanli is good.'
b. Bari, Nfanli le beteyaata!
but Nfanli FOC good
'How good Nfanli is!'

There is, then, a clear relationship between particles and exclamatives. While I will not be able to make it fully explicit, the parallel will turn out to be quite deep, holding even for some restrictions on the distribution of integrated *man*, to which I now turn.

2.3 Restrictions on modification with integrated *man*

Now we have a picture of the lexical semantics of sentence-initial *man*. As we saw, the particle meaning was expressive; we also saw that it is ambiguous, for the integrated use of *man* involved degree modification, while the stand-alone use did not. In this section, I will show that there remains more to be said about the modification performed by integrated *man*. Specifically, there are restrictions of various kinds on the modifications it can perform. These restrictions come in several flavors. The first kind involves restrictions on the environments in which the predicate *man* modifies can appear. *Man* cannot modify predicates in definite or universal NPs, for example; it also cannot modify predicates in the scope of negation or those in conditional antecedents, questions or imperatives, and, further, without certain conditions holding, it cannot modify predicates in modal sentences or in conditional consequents. For modification of content in modal sentences and conditional consequents to be possible, the speaker must be acquainted in a particular way with a truth maker for that content. These restrictions appear heterogeneous, but I will suggest in the next section that they have, at least in part, a uniform source.

Let us begin with restrictions on modification of DP-internal predicates. As a first contrast, gradable predicates appearing inside definite DPs cannot be modified.[20] To see this, consider the following minimal pair.

[20] Some people seem to allow this sort of modification for certain superlatives (though this is not very good for me personally). I have in mind what I will call 'fake superlatives' like this one.

i. John ate the biggest apple.

There is a reading of this sentence on which it is understood as meaning *John ate a really really big apple,* which is improved if the superlative predicate is lightly stressed and raised in pitch. Here the superlative is not really a superlative at all; in fact it is not even definite, as the following application of the *there*-insertion test shows:

ii. There was the biggest apple on the table.

Thus examples like (iii), even if they are grammatical, do not constitute counterexamples to my generalization in that the DP here is actually indefinite, not definite.

iii. Man John ate the biggest apple.

(49) a. Man John ate some spicy salsa.
b. Man John ate the spicy salsa.

In (49b), *man* can only modify *ate*; *spicy* is not available for it. Here are two scenarios to bring out the contrast.

(50) a. Scenario 1: John ate a great deal of some salsa, which the speaker does not find particularly spicy.
b. Scenario 2: John ate a small amount of a salsa which the speaker finds extremely spicy.

In Scenario 1, it is appropriate to intensify *eat*, because John has eaten a lot of the salsa, but not appropriate to modify *spicy*, as the salsa was not very spicy. (49b) is appropriate; (49a) is possible, though this reading is not preferred, probably because *eat* must be coerced to a gradable predicate for the modification to be sensible. In Scenario 2, (49a) is fine, but (49b) is bad. The reason is that the scenario is not an appropriate one for an intensified meaning of *eat*, because John has not eaten much of the salsa; but the salsa was extremely spicy, so modification of *spicy* is reasonable. The indefinite DP in (49a) makes this available, and so the sentence is felicitous in this situation, but since in (49b) DP-internal modification is blocked, it is infelicitous.

It is easy to see that the situation is more general. All the determiners in (51), as well as *some*, allow DP-internal modification by *man*, whereas all the determiners in (52), and also *the*, do not allow such modification.

(51) Possible:
a. Man John ate a big piece of cake.
b. Man John ate two big pieces of cake.
c. Man John ate a few big pieces of cake.
d. Man John ate several big pieces of cake.

(52) Impossible:
a. *Man John ate few big pieces of cake.
b. *Man John ate no big pieces of cake.
c. *Man John ate {most|many} big pieces of cake.
d. *Man John ate both big pieces of cake.
e. *Man John ate every big piece of cake.
f. *Man John ate two of the big pieces of cake.

Note that all the good determiners have a property in common: they are monotone increasing in their first argument, which is the one targeted by *man*.[21] The bad determiners all lack this property. We can conclude that integrated *man* can only modify predicates in monotone increasing environments, at least in the case of modification of elements inside DPs.

[21] I am indebted to the anonymous reviewer for comments which improved this part of the discussion greatly.

This observation can be generalized. Integrated *man* ultimately proves to be fairly restricted in the kinds of semantic objects it can modify. Up to this point we have considered (mainly) only simple sentences without semantic operators. Adding operators changes the picture considerably. Let us consider various types. Here, I have marked the intended modification relations (when necessary) with subscripts.[22] I take it that it is by now clear to the reader how to construct scenarios like those above showing contrasts in what is modified, and so will not provide detailed contexts for these examples.

(53) Negation:
a. *Man it's not hot.
b. *Man John didn't eat {some|any} spicy salsa.[23]

(54) Conditional antecedents:
a. *Man if John eats spicy salsa he has an allergic reaction.
b. *Man if John meets a beautiful girl he'll be a happy guy.

Some comments are in order here. (53) shows that integrated *man* cannot modify predicates in the scope of negation,[24] and (54) shows the same for conditional antecedents.[25] The case of the modalities, and of conditional consequents, is more

[22] It is interesting to note that when *man* appears with comma intonation, these restrictions do not apply, except for the one on conditionals. In particular, *man* cannot appear within the conditional antecedent. Some speakers appear to allow it within the consequent. It is also possible to use the comma intonation *man* to express something about the whole conditional.

i. Man, John didn't come to the party! (negation)
ii. Man, John might come to the party! (existential modality)
iii. Man, John must be eating a big apple. (universal modality)
iv. *[Man, if John comes to the party] he will eat some spicy salsa. (conditional antecedent)
v. %If John comes to the party, [man, he will eat some spicy salsa]. (conditional consequent)
vi. Man, [if John comes to the party, he will eat some spicy salsa.]

I will not attempt to derive the distinction between (iv), (v), and (vi) in the present paper. I note only that it seems likely that it involves speech acts.

[23] I use both *some* and *any* to alleviate possible worries that *some* being a PPI might contribute to the badness of this example.

[24] The reviewer disputes this claim with the following scenario and example. Suppose that people in this wine tasting are required to sample nine of ten cheeses on the table. John skips cheese 7, which is highly stinky. In the judgement of the reviewer, (i) is good here.

(i.) Man John didn't eat a stinky cheese.

I find this example bad, but this judgement is extremely subtle. The suggested *de re* interpretation may indeed improve things, but this requires that the predicate to be modified is removed from the scope of negation anyway. I will put this example aside in what follows.

[25] One might wonder about the fact that *man* cannot modify the negated predicate itself. This fact may indicate that negated predicates are just not gradable in the right way. Some support for this idea comes from the behavior of negated predicates in comparatives, which often are infelicitous as well.

(i.) ? John is more not tall than Bill is.

The scale structure simply does not seem to be right for the intended purpose. The same holds for other kinds of degree modification.

(ii.) ? It's very not hot today. (intended to mean that it is very cool today)

complex. These are fine in general, given the right context. For instance, suppose we see someone come in from outside dripping with sweat. Here an utterance of (55a) seems perfect. Similarly, suppose that John has borrowed $300 from me this afternoon, and I learn from you later that he just needed it for a date tonight. Then I could say (55b) appropriately. We could use (56b) when we have learned that John is allowed by his parents to do some things that we characterize as extremely cool: e.g. go to Bill the bad kid's parties, or stay out at the club all night. (57a) could be used on the basis of knowing that John is required to eat something we characterize as nasty: for instance, he might have to eat an unspiced porridge of green vegetables and mung beans for the treatment of his stomach ulcer. (58b) is fine if we know that John is about to start bobbing for apples and that one of the apples in the water is extremely large (and that John will eat whatever apple he gets). The other cases are similar.

(55) Epistemic universal modalities:
  a. Man it must be hot out there.
  b. Man they must have gone to an expensive restaurant.

(56) Deontic existential modalities:
  a. Man John can go to wild parties.
  b. Man John {is allowed to|can} do cool things.

(57) Deontic universal modals:
  a. Man John has to eat nasty things.
  b. Man we have to do this fast.

(58) Epistemic existential modalities:
  a. *Man it might be hot.
  b. Man John might eat a big apple.

(59) Ability modals:
  a. Man John can do amazing things.
  b. Man John can find nice restaurants.

(60) Conditional consequents:
  a. Man if John goes to the party he is gonna meet a beautiful girl.
  b. Man if the police show up are they going to get a big surprise.[26]

Thus content in the scope of deontic and ability modalities and epistemic universals seems available in principle as a modification target for integrated *man*. However, it is important to note that this kind of modification is not always posslble. In the examples above, the modal statements were made on the basis of generalizing from a particular known fact. It seems that the knowledge of the fact is crucial.[27]

[26] Note that in all the modal cases inversion is available when the example is good. (The semi-modals like *has to* fail, presumably for syntactic reasons.) This again shows the connection between exclamatives and the particle.

[27] These judgements are somewhat subtle, but when presented with scenarios distinguishing the cases (one with an instance and one without), informants universally found the instance without acquaintance with some evidential fact infelicitous (to anticipate the analysis somewhat).

To see the latter, suppose that we know only (on the basis of hearsay, for example) that John is required to eat things that are really nasty (according to someone). In this case, (57a) is not usable. It is necessary to have a concrete basis for the assertion: we must know that John has to eat some particular thing that we think is really nasty. Note that this restriction has nothing to do with the 'personal taste' character of *nasty*: a sentence with e.g. *yellow* has the same effect (suppose that John's particular ulcer responds well to saffron, to make this marginally plausible).

(61) Man John has to eat yellow things.

In essence, then, it is necessary to have direct acquaintance with some instance verifying the modal complement. It is not enough to just know the truth of the modal statement. The following contrast is extremely sharp. Suppose that I know that John's parents let him stay out late, for instance because John or someone else has told me so. This seems sufficient to license assertion of (62).

(62) John is allowed to stay out late.

However, even if what John has told me is that he is allowed to stay out really late, later than anyone else we know, but crucially without referring to any specific time, it is infelicitous for me to use (63).

(63) Man John is allowed to stay out late.

I must know a specific time to which John is allowed to stay out, which I consider extremely late, for me to be able to felicitously use (63). In short, I must be acquainted with some truth maker for the modal complement.

What all this indicates is the following: roughly, the speaker must be more or less directly acquainted with some object on the basis of which he takes use of the expressive to be appropriate. In the deontic case we are presently concerned with, the object in question is an individual; in others, like the epistemic universal cases above, it is a fact or proposition which serves as good evidence for the modal content. The inference from instance to rule (so to speak) is inductive, as usual with modals—the speaker takes the fact to be nonaccidental and worthy of modal generalization.

(64) John has to eat saffron-filled porridge. $\rightsquigarrow$ John has to eat extremely yellow things.

Intuitively, this makes sense: it is strange behavior to make strong statements about things one is not familiar with. If I am not acquainted with (the properties of) some object, it is odd for me to say that it is 'very *P*' for any *P*. This situation, of course, never arose with simple sentences; in such sentences, the speaker is always acquainted with the object or property in question, or so we as interpreters ordinarily assume. I will argue below that this intuition is crucial for explaining the bad cases above.

We have one final case to consider. It appears that integrated *man* cannot comfortably modify content appearing in questions and imperatives. It can be hard to distinguish exclamative-like assertions from true questions, as in (65a) ; the structure looks similar at least on the surface, but the intonational pattern in the bad case will be that of a true question. Note also that there do not seem to be exclamatives that are 'hosted' by questions or imperatives either, yet another connection.

(65) a. *Man is it hot?
b. *Man go get me a cold beer!

The restrictions can be summarized as follows.

(66) Integrated *man* cannot modify objects in the scope of negation, in conditional antecedents, in DPs that are not upward entailing, or in questions or imperatives; and cannot modify elements in the complements of modals or conditional consequents for which the speaker is not acquainted with a truth maker.

We are now ready to turn to analysis. What is the nature of these restrictions? The next section will provide an account of the data.

2.4 Deriving the restrictions

Let us now consider how to account for this data. My strategy will be to begin with the relatively straightforward case of the quantifiers. The analysis developed to handle this case turns out to extend easily to cover most of the other cases excluding imperatives, for which an additional stipulation proves necessary. The remaining case, which is the requirement for acquaintance with a truth maker, is analyzed last.

Recall that only monotone increasing quantifiers allow modification of elements within DP. This suggests a simple restriction:

(67) A determiner D is monotone increasing iff $D(A)(B)$ entails $D(A')(B)$ for $A \subseteq A'$.

(QUE) Only elements in monotone increasing DPs can be modified by *man*.

This simple stipulation already covers the DP cases. To make it into a true analysis, we must say something about the reason it exists. Before doing so, though, I will extend it to the other cases. To see how this can be done, note that the following environments are not upward entailing: the scope of negation, conditional antecedents, and questions. To cover these cases, therefore, we can apply a version of (QUE). (QUE) applies only to determiners, but it is easily generalized. Following von Fintel (1999), we can define a cross-categorial notion of upward entailment.

(68) Cross-categorial entailment (von Fintel 1999):
a. For p, q of type $t : p \Rightarrow q$ iff $p =$ False or $q =$True.
b. For f, g of type $\langle \sigma, \tau \rangle : f \Rightarrow g$ iff for all x of type $\sigma : f(x) \Rightarrow g(x)$.

(69) A function f of type $\langle \sigma, \tau \rangle$ is upward entailing (UE) iff for all x, y of type σ such that $x \Rightarrow y : f(x) \Rightarrow f(y)$.

By this definition, quantifiers that are not monotone increasing are not upward entailing, and neither are conditional antecedents or the scope of negation. Questions are not upward entailing either, though they produce complications for this formulation since the notion of entailment is of necessity somewhat different from that in (68a), as it involves notions of answerhood rather than truth. I will put these issues aside for the present paper as the technicalities would take us far from the main discussion.[28] The obvious modification to (QUE) thus rules out these cases as well.

(UE) Only elements in upward entailing environments can be modified by integrated *man*.

Conversely, by (UE), objects in sentences without semantic operators, in the scope of modals, and in conditional consequents are possible targets for modification.

Before moving on to the other restrictions, let us stop to consider why (UE) might hold. This question has a clear answer. What is the function of *man*, given the observations in the previous section? It serves, essentially, to strengthen a claim of the speaker's, though in an expressive rather than an assertive way. But the way in which it performs its strengthening is (according to my analysis) via a degree modification of a gradable predicate: shifting, effectively, to a more extreme set of degrees than would otherwise result from semantic composition. Such a shift would, in a downward entailing environment, result in a weaker statement than the original one, as discussed in detail by many authors for the case of free choice *any* (e.g. Kadmon and Landman 1993; van Rooij 2003a). It therefore makes sense that only upward entailing environments are possible targets for modification, given that the function of *man* is to strengthen the speaker's claims.

This observation also leads to an approach to one case not covered by the above, that of imperatives. Imperatives are not downward entailing environments: plainly, (70a) entails (70b) in the intuitive sense.

(70) a. Buy me a chocolate donut.
b. Buy me a donut.

Imperatives are upward entailing, though not in the sense of (69), assuming that we do not take imperatives to have truth values.[29] Why then are they out for purposes of expressive modification with *man*? I think the answer can be found in the characterization of the function of *man* in the previous paragraph. The role of *man* is to strengthen a claim of the speaker—an assertion. But imperatives do not offer claims, but instead make demands. It seems reasonable to tie the possibility of modification

[28] Groenendijk and Stokhof (1997) provide relevant discussion.

[29] In this sense, the imperative case requires additional work, analogous to the case of questions. I will have more to say about the semantics of imperatives in the next section.

to the presence of an assertive claim. I will therefore take *man* to felicitously modify only content that is part of 'what is said' in the sense of being part of the assertion—this merely means that the content is not presupposed or conventionally or conversationally implicated.

(A) Only asserted content can be modified by integrated *man*.

The intuition here is that integrated *man* is only used to express intensification with respect to what is asserted. This analysis also correctly predicts that the content of appositives is not available for modification, since this content is conventionally implicated rather than asserted (Potts 2005).

(71) *Man John, a good swimmer, swam that lap quickly.

Note that (A) also rules out modification by *man* in questions, so there is some duplication in the effects of (A) and (UE).

We now have two conditions, (UE) and (A), each bringing out one part of what *man* does. Recall that the felicitous use of *man* also required, roughly, acquaintance with a truth maker. Consider again the two types of good cases. In the case of epistemic universal modals, there was a need for background of a particular kind. I could not come in from outside and say (55a), so direct acquaintance is outlawed in this case; I could also not say it on the basis of no information about the outside at all. What is needed is information sufficient to *infer* that use of the expressive modifier is appropriate. This conclusion is in line with observations of Westmoreland (1998) and von Fintel and Gillies (2008) about English epistemic universals: that they have a function as indirect evidentials, indicating that the information in their complements follows by inference from known facts.

In the second kind of good case, acquaintance with some instance of the modal complement was needed. If I know that John is allowed to stay out until 4 AM, (63) is felicitous; but if all I know is that John is allowed to stay out very late, it is odd. The other modals are similar. We need acquaintance with a truth maker for the modal complement in order for *man* to be used. Intuitively this makes sense: it is weird behavior to express intensification with respect to objects that we are not familiar with, or have no real reason to intensify. This is especially true given the expressive nature of the modification here, which, because it is expressive, does not interact with semantic operators and so cannot be hedged.

What are the choices for spelling this idea out? I see several. The first begins with the intuition that we need to talk about specific objects. We might therefore assume that a *de re* reading of the modal is required. But this won't apply to the case of epistemic *must*, as discussed above, as this case requires acquaintance with a proposition or fact. Further, we run into problems with modification of objects in adjuncts, on the assumption that island restrictions apply to LF movement (and that *de re* readings are to be derived via movement at all). Modification of predicates in adjunct clauses is fine.

(72) a. Man John won a trophy in a big race.
b. Man that soldier was walking around with a big gun.

On the assumption that a unified analysis is to be preferred, I thus reject this option. The next possibility begins with the similarity of the contexts that can be modified by the particle and those contexts that support exclamative formation.

Let us first recall that exclamatives cannot be formed in many of the contexts that are impossible for particle modification: epistemic existential modals, negation, conditional antecedents, questions, imperatives.

(73) a. *Isn't John not tall!
b. *If isn't John tall, he must find it hard to find a long enough hotel bed.
c. *Isn't John tall!? (intended: yes-no question interpretation)
d. *What an expensive beer go buy me right now!
e. *If it was hot outside, wouldn't it be terrible!

They are also possible with deontic modals and in conditional consequents, just as with the particles.

(74) a. (Boy,) can John stay out late!
b. If it was hot outside, wouldn't it be nice to go for a swim!

But the parallel is not perfect. Epistemics are infelicitous in general at least with inversion.

(75) a. *Mustn't it be hot outside!
b. *Mightn't John eat a big apple!

Still, perhaps it is possible to explain away these differences, which are after all fairly minor. However, I see a different issue. The explanation for the need for a specific object is given in terms of factivity in much of the literature on exclamatives (cf. Zanuttini and Portner 2003; Villalba 2004). This explanation makes sense for the cases of existential, deontic and ability (EDA) modalities where acquaintance with a specific instance of the complement is needed for modification. But, just as with the *de re* idea above, it will not apply to epistemic *must*, where the relation is much less direct: to anticipate, an evidential one. I therefore will characterize the pattern differently. That said, I think the analysis to be presented could well be applied to exclamatives as well, though I will not pursue the point here.

The analysis I will adopt turns on the notion of the basis one has for expressing intensification. We saw that *man* in EDA modals requires acquaintance with a specific instance of the modal statement, though exactly what the object of the acquaintance relation is remains, of course, unspecified. Since this requirement is not present with deontic and ability modal sentences without the particle, we must conclude that it comes from the particle itself. Epistemic *must*, conversely, requires acquaintance with a fact that supports the truth of the modal sentence, which is, as indicated above, an evidential relation. I propose therefore to treat both requirements in terms of a need for evidence, which means defining an acquaintance relation in terms of evidence itself.

(E) The speaker must have sufficient evidence for the intensified statement.

This discussion can be made precise using notions from the study of evidentiality, which is directly concerned with evidence and justification. The idea here is that there must exist some evidence source that licenses an assertion of the content to be modified by *man*, and that the existence of such an evidence source is guaranteed by use of the sentence. In the case of simple sentences, any evidence source that licenses us to assert the simple sentence will also allow assertion of the sentence with the particle, for the evidence for the assertion will be, in general, as or more specific than the sentence content. In modal sentences, the situation is different, as the particular modal in play places further conditions on the evidence source. For epistemic universals, it must be a source of inferential evidence, and for EDA modals it must be some source characterizable as direct evidence (roughly). This direct evidence also must be ensured to be distinct from the content of the asserted modal sentence by placing a condition on it. I suggest that it have the property of entailing the content of the modal complement but not being entailed by it. This means that, in an informational sense, it is strictly more specific, and so serves as a truth maker for it.

This idea can be formalized in the evidential logic of McCready and Ogata (2007), because of the availability in this formalism of evidence sources that are associated with different kinds of information. However, doing so in full detail would complicate this paper substantially. We would need to make the analysis dynamic, in keeping with this logic, and to introduce the full probabilistic apparatus used to analyze the notion of evidence. It is also likely that the logic itself would need to be extended in order to deal with merges of evidence sources. I think that this paper is not the right place for this work; the discussion would take us far off the main topic of this article. I will defer it to another occasion. Here, I simply add a presupposition to the lexical entry of integrated *man*,[30] to the effect that the speaker has appropriate evidence for her assertion. The revised definition of integrated *man* is as follows. In these formulas, $\mathsf{E}^i_a\varphi$ indicates the apprehension of some piece of evidence φ indexed by source index i by agent a, $\triangle^i_a\varphi$ is a modal operator indicating a high degree of belief in φ by agent a based on evidence source i, and *Source* is a function from evidence sources to the type of evidence they represent (visual, hearsay, inferential, etc.). The full details of the semantics of these operators can be found in McCready and Ogata (2007). Finally, $S_{-M}(x)$ represents the sentence meaning without the modal operator and with abstraction over the individual of which the gradable predicate that *man* modifies is predicated.

(76) $[\![man_{int}]\!] = \lambda D_{\langle d,t\rangle}\{\varphi\}[very(D,d) \wedge E(c)(D(d) \wedge very(D,d))$
$(D(d) \wedge very(D,d))] : \langle\langle d^a, t^a\rangle, t^c\rangle$, where $\varphi =$
a. $\triangle^i_a D(d)$, in the case of epistemic *must*, and
b. $\mathsf{E}^i_a \exists x[S_{-M}(x)]$, where if $Source(i) = hearsay$, then $\exists x[S_{-M}(x)] \models D(d)$ and $D(d) \not\models \exists x[S_{-M}(x)]$, in the case of EDA modalities and of conditional consequents.

[30] I follow the convention of putting the presupposition inside curly braces.

Condition (a) ensures that, when the particle modifies epistemic *must*, the speaker has sufficient evidence for her to believe $D(d)$ extremely probable, where this evidence must be indirect. This is as desired. This definition also, if we take it to be part of the modal meaning rather than to be associated with the particle, as we might if we believe epistemic *must* to be an evidential, essentially takes that modal to have a presupposition of the existence of indirect evidence. Condition (b) requires the individual using the particle to have evidence for the existence of some individual satisfying the gradable predicate modified by *man* in an unmodalized version of the modified sentence. The effect of this condition is to ensure that the speaker must be acquainted with such an individual, though this acquaintance may be somewhat indirect. The possibility that the speaker merely has heard that the individual predicated of has the property in question without knowing an instance is ruled out by the requirement for non-mutual entailment of the content modified by the modal and the evidence source in the case of hearsay knowledge.

This analysis directly requires the existence of evidence for the expressive claim. Thus, the speaker must have some piece of evidence of the appropriate type, ruling out cases in which she is not acquainted with any situation that is evidence for a universal epistemic statement, or with any object that serves as a truth maker in the other cases.

Notice that this account also overlaps somewhat with the assertion account. It may be clear how it applies to the case of questions and imperatives. Questions and imperatives have no evidence associated with them directly. Many languages disallow evidentials in these contexts completely (Aikhenvald 2004), and when they are allowed in e.g. questions, they often shift to a request for evidence for the questioned proposition, among other interpretations. The evidential itself cannot be directed at the content of the question, to indicate the questioner's evidence for φ in $?\varphi$. It thus makes no sense to use *man* here, if *man* requires evidence for the modified content. A similar story can be told for conditional antecedents. There is not necessarily evidence for content in this context, clearly, and if one has sufficient evidence for the truth of a conditional antecedent, one should not assert a conditional but simply the consequent, for Gricean reasons.

The restrictions on the distribution of integrated *man* can thus be analyzed via a conjunction of three conditions: (UE), (A), and (E). Via these conditions, we see that *man* in its role as expressive degree modifier is closely connected in a semantic sense to free choice items, to speech acts, and to evidentials, but shows different semantic behavior from all of them. It is interesting to wonder which of these features are common to particles cross-linguistically; an answer requires a great deal of further research.[31]

[31] Another interesting issue is that there is some freedom as to what predicate the particles modify. In examples in which there is more than one (potentially) gradable predicate, it seems that either can be modified.

i. Man, George Bush won a hard election.

Here either the extent of the victory or the hardness of the election can be modified. One has the intuition that intonational prominence on a particular predicate influences which predicate is chosen. Therefore, it might be that focus should play a role. I cannot resolve this question here, and leave this issue also for the future.

2.5 Summary

Let me summarize the section. I showed how sentence-initial *man* is interpreted on each of the intonational patterns it appears with: with comma intonation, it expresses an emotional attitude of the speaker toward the propositional content of its host sentence, and with integrated intonation it does the same and also modifies gradable predicates in the host sentence. I further showed that the content of *man* is expressive and hence conventionally implicated. I then discussed some further complications for the integrated use of *man*, showing that the modification it induces is affected by the speech act involved in the sentence and the presence of particular kinds of evidence for what is modified.

The overlaps between the coverage of (UE), (A) and (E) indicate that there may be larger umbrella under which all three can be subsumed. Doing so would require a further investigation into the relation between evidence and assertion, and the connection of upward entailingness to both notions. I will not attempt this in the present paper.

There is one case which I have left untouched. Its proper analysis strikes me as requiring a more detailed investigation into the syntax of the relevant constructions than I am able to undertake in this paper. Here, I will restrict myself to a description of the facts, and to showing that the analysis I have presented fails to explain them fully.

Here is an initial contrast. So far we have considered only sentences without embedding verbs. There was a reason for this choice. Integrated *man* cannot modify gradable predicates within embedded sentences.[32]

(77) a. Man John thinks Bill ate some spicy salsa.
b. Man Jimmy is convinced that Fred has a beautiful girlfriend.

Here, the particle can only modify the 'embedders'—*think, know, be too bad*, yielding an interpretation for e.g. (77b) similar to (78). The gradable predicates in the complements of the embedding verbs are not available at all.

(78) Jimmy is really really convinced that Fred has a beautiful girlfriend.

A related case is the following. Many, though not all, speakers disallow modification by integrated *man* of content in relative clauses.

(79) a. % Man John ate a piece of cake that was greasy/yellow.
b. % Man John ate some salsa that was spicy.

For those speakers that disallow these sentences, *man* in these sentences, like those in sentences with embedding verbs like (77) can only modify the main verb, not the embedded adjective. Here is a scenario to bring this contrast out.

[32] This contrast was originally pointed out to me by Bernhard Schwarz (p.c.).

(80) a. Scenario C: Bill believes that John ate his cake with a great deal of gusto. But he thinks that the piece of cake John had was not that greasy/yellow. In this scenario, (79a) is appropriate when uttered by Bill.

b. Scenario C′: Bill believes that John had an extremely greasy/yellow piece of cake, but that he didn't eat with much enthusiasm, and further that (given John's cake-eating habits) he could have eaten a lot more. In this scenario, (79a) is inappropriate when uttered by Bill.

The analysis proposed above fails to handle these cases, as far as I can see. I do not know what to say about this issue, except that, as it does not hold for all speakers, perhaps something extra is at work. I am not sure what this may be.

What can my analysis say about these cases? Clearly, many attitude verbs satisfy (69), so (UE) will not rule them out. The objects of attitudes are not asserted, so (A) might help, though it can also be read as allowing cases like (77a), as the strengthening effect of *man* does strengthen the speaker's claim about John's attitudes. In any case, (A) clearly won't rule out the relative clause case (unless we assume that the content of relative clauses is not asserted, which at the least requires a substantial argument).[33] (E) seems at first glance to help, but allows for the speaker to have evidence for the existence of the strengthened form of the attitude, which is not the right interpretation.[34] In sum, my analysis has nothing to say about this case.

Let us consider briefly some possible analyses. A first option involves movement. The idea would be that *man* (on the integrated use) is base-generated adjacent to the gradable predicate and is then fronted, but at LF modifies the gradable predicate directly. How would this predict the restrictions we have seen? Without additional assumptions, it would not; we would have to say that either a) movement of *man* cannot pass CP boundaries, or b) *man* cannot be reconstructed past a CP. Both are equally (im)plausible. In any case, such an account fails, for modification by *man* is

[33] Rajesh Bhatt (p.c.) notes that it is difficult to deny the content of relative clauses directly:

A: The man who was wearing the blue hat drank too much.
B: That's not true.

Here B's response most naturally indicates that the man in question did not drink too much, not that he was not wearing a blue hat. But this does not distinguish them from adjunct clauses, which can be modified by *man*; so this will not account for our cases.

This observation also makes problematic another possible analysis involving the notion of a question under discussion (QUD; Roberts 1996). The idea would be that integrated *man* is only available to modify content that serves to answer the QUD. Canonically, this will be asserted content, so the coverage of the assertion account is mostly available. But the content of modal clauses, negated clauses, and so on, is clearly not answering the QUD. The content of relative clauses would be excluded because its main function is not to answer the QUD either. However, again, we are unable to distinguish between relative clauses and adjuncts on this analysis. There is something attractive about the idea, but I will not pursue it further in the present paper.

[34] We might take a version of (E) augmented with a condition about agentivity: when the sentence contains an agent (or a logophoric center), the evidence source index must match that of the agent. But this allows for a case where the attitude holder has evidence for her own attitude. This reading does not exist.

possible for content in adjunct clauses, as shown above, which violates island restrictions.

Another option appears to be to make use of way we have analyzed long-distance degree modification. *Man*, as I have set things up, modifies a set of degrees obtained by λ-abstraction over a free degree variable associated with a gradable predicate. This operation is entirely dependent on that variable being free at the point that *SD* applies; if it is not, it cannot be abstracted over. In order to block modification, then, we need only close off the degree variable. We might thus assume that an operation of existential closure of degree variables applies at CP. This will be enough to disallow modification across a CP boundary. But this analysis predicts that, because of the existential quantification of degrees at CP, degrees will never be accessible across a CP boundary. This means that degree modification will be impossible across such a boundary, and also that degrees will not be available across CP boundaries because the degree variable will no longer be accessible. As a reviewer points out, this prediction is wrong; in (81), the degree of tallness that Bill has is compared to the degree of tallness that John has, despite the degree originating in the lower clause.

(81) John is taller than Mary thinks Bill is.

The conclusion, then, must be that this analysis also fails. I leave this issue for future work.

3 Sentence-final uses

We are now ready to turn to the other use of *man*, on which it appears sentence-finally. As we saw in the previous section, the effects of sentence-initial *man* were largely semantic in nature, though pragmatic elements entered the picture through the influence of context (and expressiveness, if we take this to be a pragmatic phenomenon). We will see in this section that sentence-final *man* exemplifies the opposite situation: its meaning is largely pragmatic, in the sense that it is concerned with the knowledge and interaction of agents in dialogue. It does, however, have semantic effects, notably in the area of modal subordination.

The section is structured as follows. In 3.1, I provide data relevant to determining what sentence-final *man* does: the answer, we'll see, is that it acts to strengthen what is said. In that section I also make comparisons to the Japanese particle *yo*, which has a roughly similar semantics. 3.2 analyzes these facts in a dynamic semantics. The basic idea of the analysis is that the particle serves to *eliminate dissent* when it is used by modifying the information state of the hearer. Section 3.3 considers an additional set of facts: both sentence-final *man* and Japanese *yo* are able to license modal subordination in circumstances where it would not otherwise have been possible. Two possible analyses of these facts are explored, one involving an extension of the analysis in 3.2 and one making use of underspecification. The conclusion is that the first option is to be preferred. 3.4 briefly summarizes the discussion.

3.1 Initial data and cross-linguistic comparisons

What happens when we add sentence-final *man* to a sentence? That is, what is the difference between the following sentences?

(82) a. It's raining.
b. It's raining, man.

At first glance, it is not at all easy to say. Sentence-finally, *man* has no truth-conditional effects; there is never a situation in which (82a) is true but (82b) false, or vice versa. But that is not to say that the particle has no meaning at all, obviously, for if it did not, it would never be used.

A first step toward understanding what sentence-final *man* comes from considering the change in interpretation that arises when an imperative is modified by sentence-final *man*.

(83) a. Go buy some sandwiches.
b. Go buy some sandwiches, man.

The intuition is that (83b) is *stronger* than (83a); it issues a more forceful command than its particle-free counterpart. One has the impression that the speaker of (83b) will brook no resistance to his instruction. Of course, intonation must be kept constant for this to be completely clear, since changes in intonation (especially intensity) often mark changes in forcefulness.[35]

With this in mind, we can return to the declarative case. Here, too, we find a kind of strengthening. This strengthening effect in turn leads to a pragmatic effect: one has the impression that the speaker of the sentences that are modified by the particle thought her interlocutor would resist accepting the statement that is being made. So, for example, (84b) gives the feeling that its speaker expected the hearer to doubt the claim she makes by the utterance, while (84a) gives no such impression.

(84) a. You don't need that.
b. You don't need that, man. (insistent/pushy)

(85) a. John came to the party.
b. John came to the party, man. (assumes doubt on part of hearer)

The case is even clearer in dialogues where one speaker explicitly denies the content of another's utterance. In the following dialogue, on the assumption that A cares about whether B accepts her statement, it is much more natural for her to use *man* when she repeats it.

[35] There is a tendency to increase the range of pitch variations in (83b), probably because *man* is associated with informal speech. This should be avoided because pitch variation of this sort usually marks emotion. Thus, when stress is increased or pitch peaks made higher, a sense of insistence appears anyway, so the point at issue is not resolved. See e.g. Ladd (1996) for further discussion of this sort of effect.

(86) a. A: John came to the party.
b. B: No he didn't.
c. A: John came to the party, #(man).

When the particle is not used, one has the feeling that A doesn't care whether B believes that John came or not, which makes the discourse odd given that A has troubled herself to repeat that he did.

Interestingly, sentence-final *man* can also be used in questions, unlike the integrated use of sentence-initial *man* discussed in the previous section.

(87) a. Where did you go, man?
b. What do you want to do, man?

Here too we get an effect of strengthening, or insistence. But this effect is a bit different from what we saw in declaratives or imperatives. In those cases, it was very direct: an utterance of ϕ pushed the hearer to accept ϕ, and an utterance of $!\phi$ ('!' the imperative operator) pushed the hearer to accept the commitment to do ϕ. The question case involves an additional step. An utterance of $?\phi$ pushes the hearer to accept a commitment to perform the action $Answer(?\phi)$. The challenge for an analysis of sentence-final *man* is therefore to account for strengthening in such a way that it covers these three, quite distinct, cases in a general and elegant way.

Interestingly, *man* is not the only particle that has these functions. Japanese *yo* behaves in a very similar way (McCready 2005, 2006b).[36]

(88) ame-ga futteiru yo
rain-Nom falling YO
'It's raining, man.'

Like *man*, *yo* has no truth-conditional effects.

(89) Taroo-ga kita (yo)
Taro-NOM came (YO)
'Taro came.'

Also like *man*, *yo* produces a sense of insistence in both declaratives and imperatives. Of the pair below, the *yo*-less version is simply a request for the hearer to buy a new skirt, but the version with *yo* indicates that the speaker is trying to convince the hearer that the buying is something that should happen.

[36] It should be noted, though, that not all instances of *yo* perform these functions. It seems that there is a dependence on intonation. Specifically, only *yo* with falling intonation acts much like sentence-final *man*. Rising *yo* is rather different. See e.g. Koyama (1997) for discussion. Davis (2008) presents an interesting analysis of the rising intonation case, according to which the particle lexically marks the existence of a relevant action. I would prefer to distinguish information about an action from the action itself, and take the particle to indicate that necessary information for achieving a salient goal of the hearer is being conveyed. The details must await another occasion.

(90) atarasii sukaato kat-te (yo)
new skirt buy-IMP (YO)
'(Come on,) Buy me a new skirt.' (Suzuki Kose 1997)

Even dialogues involving explicit denials work in precisely the same way for both *yo* and *man*.

(91) a. A: saki Jon-ga kaetta
just.now John-NOM went.home
'John just went home.'
b. B: uso!
lie
'No way!'
c. A: kaetta #(yo)
went.home (YO)
'He DID go home!'

All this suggests that the two particles—and particles in other languages with similar functions, of which more later—should be given a uniform analysis.[37]

3.2 Analysis: eliminating dissent

The analysis I will present is dynamic in nature. The starting point is standard dynamic predicate logic (DPL; Groenendijk and Stokhof 1991). The basic intuition behind this theory is that sentences denote not propositions but 'context change potentials:' the meaning of a sentence is the power it has to change the information state of an interpreter. This idea is formalized in terms of dynamic logic, which was originally formulated to model the semantics of programming languages (see Harel et al. (2000) for a full overview). I will not review the semantics of DPL or its variants here in detail.[38] I will, however, indicate briefly some points that are crucial for the analysis.

[37] Actually, the analysis cannot be fully uniform, for two reasons. The first involves new vs. old information and will be discussed in some detail below. The second is that *yo*, unlike *man*, cannot always appear in questions with a question interpretation.

i. ame-ga futteiru ka yo
rain-Nom falling Q PT
'What, it's raining?'

The sentence above is grammatical, but is not understood as an information question. However, *yo* can appear with questions formed with the particle *no* (as pointed out to me by Kazuo Nakazawa and Shigeo Tonoike, p.c.).

ii. doko ni iku no yo
where to go Q PT
'And where are you going?'

I have no good explanation for this difference between *ka* and *no*.

[38] A good introduction to DPL and related systems is Muskens et al. (1997).

What happens when an interpreter processes a sentence? According to dynamic theories, she adds the information contained in that sentence to her information state.[39] Here two cases can be distinguished. In the first, the information in the sentence is compatible with the information the interpreter already has. Then the new information is simply added to the information state by a process of *update*. In DPL, information states are understood as sets of world-assignment pairs. Updating with new information (in the propositional case) simply amounts to removing those pairs that do not verify the new information, thus, where σ is an information state and $\sigma[\phi]$ the result of updating σ with ϕ:

- **Update**.
  $\sigma[\phi] = \{\langle w, g\rangle \in \sigma | \mathcal{M}, w, g \models \phi\}$

There is one other possibility. What happens when the information already in σ is incompatible with the new information ϕ? The result of update is the empty set, which corresponds in this theory to $\bot$, the absurd state. When an update results in the absurd state, the discourse fails.

This is, of course, an idealization. Presumably actual humans do not enter the absurd information state when they learn a piece of information that conflicts with their previous beliefs. And, of course, this problem is not one that is limited to dynamic semantics; it arises equally (though in a slightly different form) with any account of belief change that makes use of a static semantics, as long as the underlying theory validates $\phi \wedge \neg\phi \models \bot$, as classical theories do. The obvious way to solve the problem is to provide a theory of belief change that allows for retraction of previous beliefs when they conflict with new facts. Probably the most well-known of these theories is the so-called 'AGM' theory of belief revision (e.g. Gärdenfors 1988). In this theory, a 'downdate' operator can be defined, the opposite of update. Downdate is an operation that removes content from an information state rather than adding it; I will write 'downdate with φ' as '$\downarrow \varphi$'. Downdating an information state σ with φ (equivalently: updating σ with $\downarrow \varphi$) yields a minimal revision of σ compatible with φ. Sometimes downdating will require a more complex revision of the information state (belief set), for example when φ is a crucial premise in certain inferences; more details can be found in Gärdenfors (1988). The analysis of the particles will make crucial use of this operation.

I use downdate to define the following operation, which I call 'strong assertion.' Here, as usual in dynamic semantics, ';' denotes dynamic conjunction (function composition).[40]

(92) $\sigma[assert\varphi] = \sigma[\varphi]$ if $\sigma[\varphi] \neq \varnothing$
$\sigma[\downarrow \neg\varphi; \varphi]$ else.

[39] I will ignore the distinction between tests and updates in this exposition for simplicity.

[40] There are some technical complications with defining revision operations in dynamic semantics. They are solvable but this would be a distraction in the context of this paper. See van Benthem (2004) for relevant discussion.

That is, update with φ if such an update is admissible (does not result in an empty—crashed—information state)–and, if not, first downdate with the negation of φ and then update with φ. This is equivalent to the AGM revision operation. Thus $sassert(\varphi)$ makes update with φ always possible, regardless of whether φ conflicts with the original information state.

My suggestion now is that the strength associated with sentence-final *man* comes directly from its denotation: it simply indicates strong assertion (in assertive contexts). Its lexical entry therefore is simple.

(93) $[\![man_{sf}]\!] = \lambda p[sassert(p)]$

It will be clear how this accounts for the feeling of strength imparted by the particle: if the hearer assents to the update, the downdate associated with *sassert* will steamroll any objections the hearer might have had to assenting to whatever is in its scope, in some cases even to the extent of eliminating some real beliefs of the hearer. Further, it makes perfect sense now why it is natural to use *man* in contradicting explicit denials: here, it has already been signaled that ordinary update will fail, so use of the particle is in fact *necessary* the speaker wants to get her point across.

This analysis accounts (I believe) nicely for the assertive case. But notice that it won't work 'out of the box' for cases where *man* is hosted by imperative or interrogative sentences. Standard dynamic semantics is concerned mostly with information update. Since non-declarative clause types don't (directly) convey information about the world, they are not covered by the semantics given so far.[41] To analyze these cases, we need to extend the logic to imperatives.

To do so, I will make use of a variant of the dynamic semantics given for imperatives by Mastop (2005).[42] In the variant of this logic I will use, the ontology is extended with actions, written $a \in \mathcal{A}$; information states are now pairs of world-assignment pairs, as above, and *schedules*, members of $(\mathcal{P} \times \mathcal{A}) \times \{\text{DO}, \text{DON'T}\}$, written π. Here $\mathcal{P}$ is the set of persons and A the set of actions, so each object π is a pair of an individual and an action, paired with an instruction to perform or not perform: i.e., a statement of whether or not the individual has the action on his/her 'to-do list.' The set of information states is now $\Sigma = \langle\langle W, G\rangle, (\mathcal{P} \times \mathcal{A}) \times \{\text{DO}, \text{DON'T}\}\rangle$.Thus the first element of an information state corresponds to what we saw before, a world-assignment pair representing the information about the world an individual has, but the second element is new, and represents the actions that individual is committed to performing, or to not performing.

Update of asserted content is just as above, but defined on the first member of σ.[43] Update with imperatives, however, proceeds on $2(\sigma)$, as follows.

[41] Of course, the act of using an imperative or asking a question indirectly gives information about the desires and knowledge of the person who uses them. But this is purely a side effect. It turns out to be relevant to the analysis of the particles, though, and accordingly is discussed further below.

[42] Again, I will not use the full logic or discuss it completely; and in fact my presentation simplifies the original considerably (as well as making it considerably less elegant). For details, the reader is invited to consult Mastop (2005).

[43] Hereafter I will make use of projection functions 1,2 on the corresponding elements of information states.

- **Update with imperatives**.
  $\sigma[!(x,a)] = \langle 1(\sigma), 2(\sigma) \cup \langle\langle x,a\rangle, \textsc{do}\rangle\rangle$
  $\sigma[!\neg(x,a)] = \langle 1(\sigma), 2(\sigma) \cup \langle\langle x,a\rangle, \textsc{don't}\rangle\rangle$

In the following I will not make use of the flexibility provided by the use of variables over individuals in these definitions (needed for commands to third parties and embedded imperatives). I will always assume that the command is hearer-directed and indicate this by using h. When an interpreter updates with an imperative, then, she adds to her schedule the commitment to do the action commanded by the imperative, if it is positive, or the commitment not to do that action, if the imperative is negative. This analysis corresponds quite closely to the property-based account of imperatives of Portner (2004). The present analysis is closer to our earlier set-up, though, and so it is more straightforward to express the analogue of strong assertion in it.

The question to ask is what happens when one is commanded to perform an action that is incompatible with the schedule one already has: more formally, what is the effect of updating σ with $!(h,a)$ when σ already contains $\langle\langle h,a\rangle,\textsc{don't}\rangle$? Mastop defines the notion of a *quandary*, a state in which some $a \in A$ is both to be done and not to be done; a quandary is the analogue of an inconsistent, and therefore empty, information state in dynamic semantics for declaratives. Update of this kind therefore results in a failed discourse move.

With this background, we can define a 'strong imperative' operator in just the same way as we did for declaratives above.

(94) $\sigma[\mathit{simperative}!\varphi] = \sigma[!(h,a)]$ if $\sigma[!(h,a)]$ is quandary-free
$\sigma[\downarrow !\neg(h,a); !(h,a)]$ else.

This operator can be used for questions as well. I take it that questioning ϕ introduces into the schedule of the interpreter the following condition: $\langle(h, \mathit{Ans}(?\phi)),\textsc{do}\rangle$. The idea is that if an interpreter accepts a question, she is then obligated to answer it. Reluctance to accept a question then amounts to reluctance to answer the question. So asking a 'strong question' can be defined in the following way.

(95) $\sigma[\mathit{sques}?\varphi] = \sigma[?\varphi]$ if $\sigma[!(h, \mathit{Ans}(?\varphi))]$ is quandary-free
$\sigma[\downarrow !\neg(h, \mathit{Ans}(?\varphi)); !(h, \mathit{Ans}(?\varphi))]$ else.

We now have a family of operators that, in some sense, strengthen the effects of various sentence types. To give a full semantics for sentence-final *man*, we have several options. A first possibility is to state that the particle is ambiguous in its application to these three sentence types, and that the particular operator selected depends on the sentence type. This is rather inelegant. Better is to define the particle semantics in a general enough way that it covers all these cases. To this end, I will use the notion of a *quandary inducer*: this is a formula ϕ present in (i.e. entailed by) an information state that, when update with another formula ψ is attempted, results in a quandary with respect to ψ. We will say, for instance, that $\neg\phi$ is a quandary inducer for ϕ. Quandary inducers can be defined as follows:

- **Quandary inducers**.
  $\neg\varphi$ is a quandary inducer for φ;
  $!\neg(h, a)$ is a quandary inducer for $!\ (h, a)$;
  $!\neg(h, Ans(?\varphi))$ is a quandary inducer for $?\varphi$.

I will write $QI(\varphi, \psi)$ when φ is a quandary inducer for ψ.

With the notion of quandary inducer, we can give a general definition for strong operators, and thereby for sentence-final *man*.[44]

(96) $\sigma[strong\varphi] = \sigma[\varphi]$ if $\sigma[\varphi]$ is quandary free
$\sigma[\downarrow \psi; \varphi]$ else, where ψ is s.t. $QI(\psi, \varphi)$.

(97) $[\![man_{sf}]\!] = \lambda p[strong(p)]$

This semantics is just what is needed. We can account for the strengthening effects of *man* by using this generalized notion of strength, as it applies across combinations with a variety of sentence types.

The particle *yo* can be given an almost identical semantics. As we saw above, it behaves roughly similarly to sentence-final *man*. The only difference is that *yo* also involves a notion of new information; as has been observed in many places in the literature (e.g. Suzuki Kose 1997; Noda 2002), the content in *yo*'s scope must be new to the hearer.[45] To capture this, we need only add a presupposition to the lexical entry above.[46]

(98) $[\![yo(\varphi)]\!] = \lambda p\{\mathcal{B}_S\neg\mathcal{B}_H p\}.[strong(p)]$

This semantics accounts for the insistence effects seen with *yo*, and also for its similarity to sentence-final *man*. It will not quite work for the case of imperatives, however, as imperatives cannot be believed, so $B_H p$ is not satisfiable here. The two cases can be accounted for by assuming that in the case of imperatives we require only that they are entailed by the information state, so $\langle\langle h, a\rangle, \textsc{do}\rangle \in 2(\sigma)$, for imperatives commanding action a. However, this kind of analysis cannot extend to questions, which, though they introduce an obligation on the hearer to answer them (which can function to induce quandaries, as discussed above), do not have this as their literal content, and so cannot be 'believed' in the generalized sense we are interested in here. As a result, we have an explanation for why *yo* is bad with information-seeking questions, while *man*, since it lacks this presupposition, is not.

[44] Actually the definition in (97) is not quite right, because it makes reference only to objects of propositional type. But this can be taken care of by a simple type-shifting operation (e.g. Mastop's function μ, which maps pairs of individuals and actions to the corresponding propositions), or by giving the particle a polymorphic type (restricted to a few cases), which is not particularly complicated; this seems preferable to actually making the particle ambiguous.

[45] Takubo and Kinsui (1997) make use of a different model, but the intuition is roughly similar.

[46] McCready (to appear) argues that the relevant presupposition is better captured using a notion of relevance based on ideas from utility theory (cf. van Rooij 2003b). I will not introduce this complication in the present paper.

This analysis accounts for restrictions noted in the literature on the use of *yo*. Suzuki Kose (1997) notes that in contexts where the speaker has absolute authority over the hearer, use of *yo* is infelicitous. For example, in the context of an army officer ordering his troops, (99a) is good, but the corresponding version with *yo*, (99b), is bad:

(99) a. Susume!
Advance!
'Advance!'
b. # Susume yo
Advance YO
'Advance, man!'

Kose believes that *yo* emphasizes the personal desires of the speaker; as a result, she claims (99b) is bad because it is inappropriate for an officer to emphasize personal desires when giving orders to his subordinates. The present analysis leads to a different way of thinking about the facts in (99): for *yo* to be used, one assumes that there is a reason, as with any lexical item (or indeed action). What the particle does is to ensure, or attempt to ensure, that the hearer accepts the content in its scope. But in the case of the army officer, there is no reason to doubt that the hearer will accept this content: given that the troops are subordinate to the officer, they are required to accept his orders. As a result, use of the particle is marked. The same holds for an example with *man* provided by a reviewer:

(100) #Pick up your toys, man. (to a child)

The child is expected to obey the instructions of the adult. The explanation here is therefore the same as above. Since the adult has no reason to expect his instructions to be ignored,[47] he has no reason to use the particle.

The converse case can be seen in another example noted by the reviewer. When addressing the top political figure of my country—the president or prime minister—with the results of a parliamentary vote, it would be inappropriate for me to use *man*.

(101) We're ten votes short, man.

The reason is that, given the power asymmetry between the leader and me, it is inappropriate for me to assume I have the right to try to force her into accepting any content; so a strong assertion is simply a bad discourse move.

As the above may make clear, the notion of speech act is very relevant to the analysis of particles. And, indeed, there is substantial evidence for taking the sentence-final particles to relate to speech acts. First, they do not embed. Second, they do not appear in disjunctions, which Krifka (2001) has argued to be unable to

[47] Given possibly unrealistic assumptions about how children behave, at least. In my own judgement, I find (100) not so bad if we consider a situation in which the speaker is telling the child to clean up for the fifth or sixth time.

conjoin speech acts; (102b) is fine at first sight, but the second clause has the flavor of an afterthought or even a correction, so in some sense is not 'really' a disjunction. If we force a true disjunctive reading, the sentence becomes very odd. The one place where it does appear that speech acts are not required is in the antecedents of conditionals, which have been argued not to host speech acts; but even here it is not clear that there is modification of the sort I have analyzed, in that *man* in (102c) has a vocative flavor. The same holds for 'biscuit conditionals' (e.g. Siegel 2006).

(102) a. *John said that [he wanted to go, man].
b. *Go to school, man, or go to work.
c. [If John comes to the party, man,] there will be some trouble.
d. [If you want some beer, man,] there's some in the fridge.

The present analysis is in fact intended in part as an analysis of what speech acts do, as may be clear from the notions of strong assertion and the other strengthened speech acts. It seems to me that a dynamic semantics is very appropriate for this kind of analysis. Such ideas are of course already implicitly or explicitly present in the work of researchers in this tradition, such as (among many other examples) Stalnaker (1979) or Groenendijk and Stokhof (1991). If we assume that the talk of speech acts above is not just figurative, the facts discussed in the previous paragraph fall out; and a connection between the sentence-initial and sentence-final uses of *man* becomes plain, as will be discussed in more detail below. But it is also possible to approach speech acts more directly. Here we might simply say one of two things: (1) particles directly modify the degree of strength of the speech act (Vanderveken 1990), or (2) particles work to enforce the satisfaction conditions of speech acts, where satisfaction conditions are understood as what is required for the speech act to have been successfully performed rather than as what is required for whatever the speaker hopes to ultimately achieve by them.[48] My proposal is an instance of the second strategy.

I made use of a dynamic analysis because, in a dynamic picture, it is quite straightforward to specify what it is to strengthen a speech act and under what circumstances such strengthening will be appropriate. It does little good to say that a speech act is strengthened unless we know what strengthening does. The notion of overcoming quandaries is, I think, a good way to understand strengthening, and is one that is naturally stated in a picture in which dynamic operations alter the commitments of sentence processors. The present analysis is thus a kind of speech act analysis. A further advantage of such an analysis is that it allows us to explore effects of the particles on other phenomena that are fairly clearly semantic, like that of modal subordination, which we will examine in the next section.

Before looking at modal subordination, one further point should be made. Up to this point I have talked about the particles as working to induce the hearer to accept the content they modify. But this is too simple. Because we are talking about speech acts, there are other things to be considered.

[48] Imperatives, for example, have two distinct states associated with their satisfaction. The first is when the hearer accepts the commitment to perform the commanded action. The second is when the action is actually performed. The particles affect only the first of these.

Speech acts have preconditions, as mentioned above. If I am to assert something to you, I must believe it, or it is insincere. I also must want you to, for if I did not, there would be no point in the assertion. These conditions are, of course, normative, and so violable: it is possible to lie, for example. Still, as interlocutors we must assume, in general, that those we interact with are not violating them, on pain of the complete failure of communication. We can see, then, that the performance of speech acts has side effects on the cognitive state of the hearer beyond simply the effect that is the aim of the speech act. These side effects should be taken into consideration when we consider strengthening, because speakers, as participants in discourse, are aware of these norms, and so are able to take them into account when deciding what to strengthen.

Let me make this more precise. The three speech acts considered in this paper are assertion, commanding (or requesting), and questioning—those performed by non-indirect uses of declarative, imperative, and interrogative sentences.[49] What content does performance of these speech acts introduce?

(103) a. Assertion of φ : $\mathcal{B}_S\varphi, Des(s, \mathcal{B}_H\varphi)$
b. Command (request) of φ : $Des(s, \varphi), \mathcal{B}_S\neg\varphi, \mathcal{B}_S \diamond Realize(h, \varphi)$
c. Asking whether φ : $\neg\mathcal{K}_S?\varphi, Des(s, \mathcal{K}_S?\varphi), \mathcal{B}_S\mathcal{K}_H?\varphi$[50]

So asserting φ indicates that the speaker believes φ and that the speaker wants the hearer to do so too; commanding φ[51] indicates that the speaker desires φ to be true, believes that it currently is not, and believes that it is possible that the hearer can achieve the truth of φ; asking whether φ indicates that the speaker does not know whether or not φ is true, wants to know it, and believes that the hearer does. This list is non-exhaustive, but the idea is clear.

What does all this have to do with strengthening speech acts? Simply this. The speaker is well aware that her interlocutor will gain the information in (103) from her performance of these speech acts. She must therefore be willing to put this information into play. What happens, though, if the speaker is aware that some piece of content that arises as a side effect of her speech act is something the hearer is probably unwilling to accept? Consider the following example, provided by a reviewer:

(104) You're right, man.

Surely the hearer would be willing to accept this content, which is a counterexample to my account as stated so far. Based on what has been said, the only reason to use *man* is to try to force acceptance of a potentially controversial statement. But there can be nothing controversial about the literal content of agreeing with

[49] This is, of course, a somewhat simplified picture, but a full consideration of all possible speech acts and defaults is beyond the scope of this paper.

[50] In addition to the effect of questions to induce obligations to answer on their hearers (if accepted), modeled above as a quandary inducer.

[51] This formulation assumes that propositions are commanded, as in deontic logic (e.g. Yamada 2007), which is not really consistent with the formal system assumed in the dynamic analysis, in which imperatives involve commanding actions. It is made here only for simplicity of exposition. The mapping from the 'official' representation to a propositional one is straightforward.

someone—most people believe that they are right. Why might the speaker feel it necessary to use the particle? The answer seems to be that he supposes that the hearer might have a bias against accepting some side effect of using the speech act; most likely that he believes the content in the particle's scope, i.e. $\mathcal{B}_s[right(h)]$. That is, the speaker thinks the hearer would doubt that his agreement is real. In this example, then, the particle seems intended to apply to a side effect of assertion.

How should we think about this intuition in terms of the formal analysis? It seems there are two ways to go. The first is to simply add the side effects to the asserted content. This would mean that the particle applies to the side effects as well, and we get

(105) $strong(\varphi; \mathcal{B}_S\varphi; Des(s, \mathcal{B}_H\varphi))$

for the case of assertion. But such an analysis is not in keeping with intuitions. The speaker does not assert that he believes φ when he asserts φ: this is merely a side effect. This content is not part of the actual assertion.

Vanderveken (1990) and Searle (1969) take the content in (103) to be preconditions for speech acts, which seems correct. This intuition seems to indicate that what we see in (103) should be understood as, in some sense, presuppositional. These presuppositions are of a somewhat unusual type since they concern only the intentional states of the individual who makes a speech act, and also in that (excluding very rare cases) the processor of the content will not be able to resolve them. Essentially this means that they will nearly always require accommodation (Beaver and Zeevat, 2007). What the particle is doing, then, seems best understood as assisting in the accommodation process: 'accommodate even if doing so requires some revision.' This operation is a kind of 'lift' of the *strong* operation in (96). It can be formalized as follows. Here $SE(SA\varphi)$ denotes the side effects of using the relevant speech act expressing φ.

(106) $\sigma[strong_{SE}\varphi] =$

$\sigma[\varphi]$ if $\sigma[SE(SA\varphi); \varphi]$ is quandary free

and both a) $\sigma[\downarrow \chi; SE(SA\varphi)]$ where χ is s.t. $QI(\chi, SE(SA\varphi))$ if $\sigma[SE(SA\varphi)]$ is not quandary free,

and b) $\sigma[\downarrow \psi; \varphi]$ where ψ is s.t. $QI(\psi, \varphi)$ if $\sigma[\varphi]$ is not quandary free.

This complicated definition means to cover two cases: one, as above, where the hearer has a disposition to reject the content of the speech act, and a second case, where the hearer is disposed to reject (one or more of) the preconditions for use of the speech act. In the first case, the definition works as before. In the second case, it forces downdate with whatever content is inducing quandaries with respect to the preconditions for the speech act.

This operation will only come into play in special cases: where the preconditions for use of the speech act are unsatisfied. I think this is right. In general, particles cannot rescue presuppositions that cannot be accommodated.

(107) Where's your ex-wife today, man?

Obviously, the particle is not able to force accommodation of the existence of an estranged spouse. Intuitively, this distinction has to do in part with the nature of the preconditions for speech acts, which involve only speaker intentional states and not facts about the external, and observable, world. It seems plausible that such presuppositions are easier to accommodate than presuppositions about independently verifiable facts. A full exploration of this idea lies beyond the scope of this paper.

3.3 Extensions: modal subordination

Let us now turn to another related phenomenon. This section discusses a surprising fact about the sentence-final particles *man* and *yo*. Both are able to license modal subordination. Modal subordination is a discourse phenomenon in which an anaphoric expression is dependent for its meaning on an antecedent which is in the scope of a modal, a position normally inacessible for anaphora. To see how things go, consider (108), modelled after examples in Roberts (1989).

(108) a. A wolf came in. It was big and hairy.
b. A wolf might come in. # It is big and hairy.
c. A wolf might come in. It would be big and hairy.

(108a) is fine; there are no modals, and so nothing to block anaphora. In (108b), however, the putative antecedent *a wolf* is in the scope of *might* (assuming interpretation *de dicto*, which is the only relevant reading when considering modal subordination), and anaphora is impossible. Adding another modal in the sentence containing the anaphoric pronoun, however, as in (108c), enables the anaphoric dependency again. This phenomenon has inspired a great deal of research (e.g. Geurts 1995; Frank 1997; Asher and McCready 2007).

The interesting case for our purposes is this one. Most speakers find modal subordination with *will* impossible, or at least rather weird: the consensus seems to be that *will* is too oriented to the actual world for it to successfully pick up the possibilities introduced by *might*. But, interestingly, adding *man* to the *will*-sentence in examples like (109a) makes the anaphoric dependency perfectly felicitous, as shown in (109b).

(109) a. A wolf might walk in. ? It will eat you first.
b. A wolf might walk in. It will eat you first, man.

Japanese *yo* exhibits a very similar set of facts, but in an even more striking way. Just as in English, modal subordination is impossible without an overt modal (McCready and Asher 2006). But, somewhat bizarrely, the addition of *yo* makes modal subordination fine, even when no modal is present.

(110) #ookami-ga kuru kamosirenai. ∅ ananta-o taberu
wolf-NOM come might $\varnothing_{pro}$ you-ACC eat
'A wolf$_i$ might come in. It$_i$ (will) eat you.'

(111) ookami-ga kuru kamosirenai. ∅ anata-o taberu yo.
wolf-NOM come might $\varnothing_{\text{pro}}$ you-ACC eat YO
'A wolf$_i$ might come in. It$_i$ (will) eat you, man.'

The difference—the lack of need for a futurate modal—can be ascribed to the Japanese tense system (Ogihara 1996). Japanese has no real correspondent to *will*. Its present tense is more like a 'nonpast' tense, and admits a futurate interpretation under some circumstances. This, presumably, is why nothing is present in (111) that looks like a modal at all.

How should these facts be explained? In earlier work (McCready 2005, 2006b) I gave the following analysis. Sentence-final particles are underspecified and interpreted as modal in certain circumstances. These circumstances are just those which involve weak causation between an event in the scope of a modal and another event in the scope of the particle, so that the first event 'occasions' the second in the sense that the second event cannot occur without the first (cf. Lewis 1973). This idea is spelled out within Segmented Discourse Representation Theory/SDRT (Asher and Lascarides 2003), a theory of discourse structure which uses a nonmonotonic logic to compute binary relations between discourse segments. What relation holds for two given segments is calculated using information from context, world knowledge, and the content of the segments themselves. The particular relation inferred in the logic depends on the specificity of antecedents: the more specific antecedent wins, so the least general discourse relation is preferred. The resulting structure has the form of an acyclic graph: nodes are discourse segments, edges are discourse relations. This structure puts constraints on anaphora and is interpreted dynamically.

The analysis of sentence-final particles in this system comes in two parts. First a special discourse relation *Dep*, is defined to hold in the modal subordination contexts described above. Here '$>$' is a nonmonotonic conditional, γ the discourse structure in which the new constituent β must be integrated, and α the attachment point of the new segment.

- $\langle \alpha, \beta, \gamma \rangle \wedge \mathit{Epist\_mod}(\alpha) \wedge \mathit{occasion}(\alpha, \beta) > \mathit{Dep}(\alpha, \beta)$

So *Dep* holds just of two segments where the first is modified by an epistemic modal and its content occasions the second, where

$$\mathit{occasion}(p, q) \longleftrightarrow ((p \rightarrow \Diamond q) \wedge (\neg p \rightarrow \neg \Diamond q)).$$

Second, the meaning of the sentence-final particle is left underspecified in such a way that its resolution is dependent on what relation is inferred.[52] Here, again, a nonmonotonic conditional is used. Since, in this logic, the conditional with the more specific antecedent takes precedence in case of a conflict, these two conditions

[52] See Asher and Lascarides (2003) for details of the underspecification logic.

ensure that *man* is interpreted as modal just in *Dep* contexts, and otherwise indicates strengthening.

(112) a. $\exists\pi\exists\pi'\exists R[man_?(\varphi, l) \wedge R(l, \pi) \wedge Dep(\pi', \pi) > man_\diamond(\varphi, l)]$
'If there is a discourse segment containing *man* and attached to another segment via *Dep*, resolve *man* to a modal meaning.'
b. $\exists\pi\exists R[man_?(\varphi, 1) \wedge R(l, \pi) > man_{sassert}(\varphi, l)]$
'If *man* is contained in some discourse segment, resolve it to the strengthening meaning.'

The particle itself was given the following semantics.

(113) Semantics for *man* (underspecified version 1):
a. $\sigma[man_{sassert}(\varphi)] = \sigma[sassert(\varphi)]$
b. $\sigma[man_\diamond(\varphi)] = \sigma[Might(\varphi)]$

This semantics has the desired effect: the sentence-final particle will be interpreted as modal in modal subordination-type contexts, and as strong assertion elsewhere. Another rule is actually needed for cases where both a modal and a particle modifies the second sentence (McCready 2006b). I will not discuss this here. Japanese *yo* is of course identical barring the presupposition about new information.

This story looks at least descriptively adequate, though two simple problems need to be fixed. First, the particle is analyzed with a $\diamond$ meaning. This is wrong—we need a universal modal.[53] Second, on this analysis, there is no insistent quality associated with the modal meaning. Intuitively, though, there is such a quality. So this needs to be added. I also generalize the strengthened meaning to bring it into line with the semantics given in the last subsection, though in practice no case other than the assertive one will arise. The revised semantics can be given as follows.

(114) Semantics for *man* (underspecified version 2):
a. $\sigma[man_{sassert}(\varphi)] = \sigma[strong(\varphi)]$
b. $\sigma[man_\diamond(\varphi)] = \sigma[strong(\Box(\varphi))]$

Now, with this semantics, can we provide an explanation of why particles behave as they do in these contexts? There are two subquestions to be answered here. The first is why we get the particular interpretations we do: why particles are interpreted as modal in modal subordination contexts, and as strengthening elsewhere. The second is why they have these interpretations at all. What is the connection between strengthening and modality? Can anything be said here, or is it simply chance that both particles have both interpretations?

I will start with the second question. First a preliminary consideration before proceeding to the particles: How can a discourse (update) go wrong and become incoherent? It seems that there are (at least) two ways. First, one can try to update with a sentence φ which is inconsistent with the rest of the discourse; i.e., with a

[53] I use the traditional '$\Box$'. The reader should read this as indicating her favorite analysis of universal epistemic modals.

sentence which induces a quandary, in terms of the present analysis. Another way is to try to update with a sentence with unsatisfied presuppositions. Again, update will fail on this picture (assuming a Beaver (2001)-style 'test-to-update' picture of presupposition). The speaker is thus faced with a potential dilemma. What can she do if she wants to communicate φ but knows that either the hearer believes $\neg\varphi$ or the presuppositions of φ won't be satisfied?

One answer, in light of the preceding discussion, is clear: make use of sentence-final particles. If accepted, this will force revision of the hearer's belief state in the first case, resulting in coherent update. It can also fix two kinds of presupposition failure: those resulting from quandaries arising from attempts to accommodate the side effects of speech acts, and those when a pronoun is unbound due to accessibility issues involving modals. The first two kinds of repairs are handled by strengthening, but the latter by the modal interpretation. Here we see a connection. We can think of the particles as operators that work to ensure that coherent update is possible. This is, I think, the effect that connects modality and strengthening: both are able to force coherence.

If this is right, an answer to the first question becomes available. Modal interpretations arise when they help coherence, but not otherwise. I will now spell this out rather informally, again making use of SDRT. SDRT has a concept of *maximizing discourse coherence* (Asher and Lascarides 2003, pp. 230–238). A discourse structure (and hence a resolution of underspecified conditions) is optimal ($\leq_{\alpha,\beta}$-maximal) iff it contains the minimal number of labels (i.e. has a simpler structure), has the fewest number of 'clashes' (contradictions, semantic or pragmatic), makes use of the strongest discourse relations, and contains the smallest number of underspecifications, so that all underspecified objects are resolved to one of their possible meanings.[54] For us here, the last two conditions are potentially relevant. Note that the last condition means that as many anaphoric elements as possible are resolved. Assuming that presuppositions are anaphoric in nature, they are included in this total (cf. van der Sandt 1992, among many others).

Let us now consider how things will play out in the case of the particles. There are two cases, one where the particle has a modal interpretation and one with a strengthening interpretation. I suggest that the MDC-optimal interpretation is selected. If correct, this provides an explanation of the stipulative rules for underspecification resolution in (112).

The first case involves modal subordination contexts. Suppose first that *Dep* is a stronger relation than other possible relations that could be inferred in these contexts like *Continuation* because it is more difficult to infer.[55] If this is so, then structures with *Dep* inferred are preferred to non-*Dep* structures. But we do not actually need this assumption. Structures in which the particle is interpreted as modal are preferred in any case, because if the particle is interpreted as modal, the presupposition of the pronoun—that it have a binder (Geurts 1999)—will be resolved, since the

[54] Notice that this kind of definition involves a comparison of different possible structures. We do not anyway consider situations in which these conditions clash. For the cases of interest here, the ordering will coincide on each part.

[55] This interpretation of 'strength' seems reasonable enough; another possibility would be that the stronger relation is the one that has more semantic content. This is not the place to explore the options.

anaphoric elements can be resolved to the potential binders in the scope of the modal in the first sentence via whatever mechanism one takes to be at work in modal subordination. Therefore, more underspecifications will be resolved in structures where the particle is given a modal interpretation, and consequently such structures are MDC-optimal. Thus *particle*$_{\Box}$ interpretations are preferred in such contexts, as desired.

The second case involves contexts where there is no modal subordination. Here the situation will be different. There is no need to infer *Dep*; other relations will hold between the discourse segments. This fact, however, seems less important than the observation that intepreting the particle as modal won't help bind any variables, because there is no modal subordination. There is therefore no reason to take either structure to be MDC-optimal. As a result either interpretation should be possible for the particle. Why then does the modal interpretation not arise in these contexts? In (112), this follows in a stipulative manner from the form of the rules and the semantics of the nonmonotonic conditional. How can this fact be derived without the stipulation?

I think that there is a natural explanation available for these facts. First, note that modal statements are weaker than nonmodal ones.[56] The third rule of MDC says to prefer stronger discourse relations. This notion can be generalized to specify that stronger interpretations should be preferred in general. Plainly, we cannot always choose the strongest interpretation of underspecified sentences, or there would (for example) be no quantifier ambiguities; but, at the discourse level at least, this seems like an obvious pragmatic constraint, and it does seem that the particle interpretation is determined at the discourse level. Modifying the definition of maximal discourse coherence in this way will cause the desired result to follow, because the modal interpretation yields a weaker semantics than the strengthened one.[57]

The upshot is that the modal meaning for sentence-final particles is preferred for reasons of discourse coherence. Further, this preference follows from existing constraints on discourse interpretation coupled with easily justifiable pragmatic considerations. We now have a clear picture of the relation between the strengthening and modal uses of the particles: both work to maximize the coherence of a discourse.

3.4 Summary

In this section I have discussed the particles *man* and *yo*, showing that they serve to strengthen utterances on the one hand, and have the ability to be interpreted as modal in certain contexts on the other. I analyzed the first use in a dynamic semantics augmented with a downdate operation. I suggested that the second, modal meaning was triggered by contexts in which a modal meaning could serve to repair presupposition violations of a specific kind, unbound pronouns. The whole

[56] Or so the standard wisdom goes; see von Fintel and Gillies (2008) for a different view.

[57] The proposed modification of MDC suggests treating the whole matter of particle interpretation and coherence in terms of utility and relevance maximization (cf. papers in Benz et al. 2006). This is left for later work.

discussion indicated that these sentence-final particles are best understood as coherence maximizers.

It is perhaps interesting to note as a final point that the content of sentence-final *man*, and that of Japanese *yo*, like that of sentence-initial *man*, cannot be directly denied. Does this mean that it is expressive? I doubt it—or at least that this evidence has any bearing on whether it is or not. In the case of sentence-initial *man*, the content expressed was content that was deniable in principle, in that it was truth-conditional. Since direct denials could not target it, however, I treated it as expressive. In the case of the sentence-final particles, the content expressed is not truth-conditional, as already mentioned above; this is reflected in the analysis. The fact that denial cannot target it comes from a different source: it is simply not the kind of meaning that *can* be denied, at all. The intuition is that particles, in some sense, do not *mean* anything themselves, in the sense of 'what is said'; rather, they instruct the interpreter on *what to do* with the truth-conditional content they modify. In this way, it is more useful to ask, not what particles *mean*, but what they *do*, a distinction of the kind already pointed out by Kaplan (1999).[58] This is a place that I believe dynamic semantics can have many new applications: its origins in dynamic logics for programming languages make it perfectly suited to talk about what particular expressions *do*.

4 Conclusions and directions

This paper has considered the semantic contribution of the English particle *man* in some detail. I began with sentence-initial *man*, showing that it has two distinct uses separated by intonation, and giving an analysis in terms of expressive content and degree quantification. I discussed several ways of analyzing facts related to the availability of modification with the integrated use of *man*; by combining constraints on assertion, evidence and monotonicity, it was possible to account for almost all restrictions. We then turned to sentence-final *man*, showing that it had two distinct uses: as a strengthener of speech acts, and as a modal. I modeled its strengthening effects in a dynamic semantics, and showed that the two uses together could be viewed as ways to maximize the coherence of a discourse; the sentence-final particles were thus taken to be coherence maximizers. There I also suggested that dynamics is a potentially fruitful way for analyzing expressions of various sorts that serve as instructions on how to process information, and perhaps also for expressives more generally.

Whither next? The present paper, while (I hope) clarifying many questions about *man*, has raised many more questions that demand answers. First, what other kinds of particles are there, and how can they be analyzed? As discussed in the introduction, people have done formal work on some German particles: *ja* is studied by Kratzer (1999) and Kaufmann (2004), for instance, and Zimmermann (to appear)

[58] "It may be that the *primary* problem in semantics is not what does this or that *mean*, but rather in what *form* should we attempt to say what this or that means." (Kaplan 1999, p. 5) I think that dynamic semantics is one natural way to approach the meanings Kaplan is concerned with.

examines *wohl* in some detail. But work of the level of formal explicitness needed for true understanding is otherwise difficult to find. Still, it is not hard to find other particles that deserve attention, even if we restrict our attention just to English and Japanese. Starting with the sentence-final case, it is easy to find particles that behave like sentence-final *man* in English (cf. Kiesling 2004).

(115) a. John came to the party, dude.
b. John came to the party, girl.
c. John came to the party, bro.

There do not seem to be many significant semantic differences between sentence-final uses of these particles and sentence-final uses of *man*. Prominently, however, the particles in (115) are appropriate only when addressed to individuals of a particular gender. Addressing a male with (115b), for instance, would be very odd. Similar things can be said for other sentence-final particles in English.[59] Many of these particles also have sociolinguistic connotations, but this is unrelated to our concerns here.

It is already clear that all these particles have something in common, despite the differences mentioned in the previous paragraph: they are all derived from common nouns that (at least potentially) are hyponyms of *person*. That is, they are all words for people, or kinds of people. This is an interesting regularity, and one that shows up with particles in other languages such as Spanish (e.g. *guey* 'dude', *tío* 'uncle') as well. This suggests possible relations between vocatives and the sort of sentence-final particle studied in this paper, which more research is needed to clarify.

But not all sentence-final particles are related to vocatives in any obvious way. Japanese has, of course, *yo*; it also has other, related particles, like *zo* and *ze*. *Zo* is associated with male speech; it behaves in a way more or less semantically identical with *yo* aside from this association, which seems to be a matter of register, although the two differ in the clause types they can appear with. For example, while *yo* can appear with hortatives, *zo* cannot. The semantics of *ze* is less clear, but it does seem to induce a kind of forcefulness that is similar to that of *yo* or *man*. Japanese also has a number of other particles which have different effects (Noda 2002 provides a brief overview). One wonders, given the Japanese facts (where the particles have no relation to common nouns at all), whether the relation between particles and vocatives is limited to Indo-European languages, or appears more generally. Much more research is needed to clarify this question. I think that the directions proposed in the present paper can be helpful in analyzing these other particles. But it is not clear that it can apply to all particles, given our present level of knowledge. Semantically speaking, what other kinds of particles are there? Does the presence or

[59] Examples include *brother, son, baby*, and *G*, among many others. *G* is a reduced form of 'gangster/gangsta' that appears only sentence-finally (when non-vocative). It is distinct from sentence-initial 'gee,' which is derived from 'Jesus' and conversely lacks a non-vocative sentence-final use. This can be made clear by using the non-reduced forms; both (i) and (ii) are clearly vocative in nature.

i. Gangsta, John was at the party.

ii. John was at the party, Jesus.

absence of sentence-initial or sentence-final interpretations of *man*-like particles correlate with other facts about the grammar? Fully answering these questions is a very large project.

Another question that arises is the relationship between sentence-initial *man*, and the integrated use in particular, with the semantics of exclamatives. Throughout the discussion of this use of the particle I showed parallels between exclamatives and integrated *man*, though, as we saw, the two do not behave identically. But the connection clearly goes deep. Exploring it should give insight into both particles and exclamatives.

Perhaps the most obvious question, though, one specific to *man*, is this: what is the relation between sentence-initial and sentence-final uses of the particle? Is there anything general we can say about the meaning of the particle in both contexts? The analyses I have given have, of necessity, looked very different: expressive content and degrees for sentence-initial *man*, and dynamics of revision and speech acts for the sentence-final counterpart. However, there is a connection, if a conceptual one. Both indicate the importance of a piece of content, and thereby emphasize it, or serve to strengthen the speech act it is involved in.

Sentence-initial *man* serves to indicate a kind of emphasis or strength: this is very explicit in the case of integrated *man*, because of its reference to degrees and heightening of properties, but also holds for the non-integrated case, in that expressing that one stands in a heightened emotional state with respect to a proposition has the effect of indicating that the speaker finds the (truth of the) proposition to have some importance. Sentence-final *man* also involves emphasis and strengthening, obviously, in that it serves directly to strengthen speech acts, and thereby emphasize the importance the speaker attaches to their content. Thus 'both' particles are used to strengthen utterances. The difference lies in whether this strengthening happens at an expressive level—a level of appropriateness of utterance—or a level of discourse processing, at which a hearer's beliefs and commitments are altered by use of a sentence.

In this second case, I showed that there are connections to be made to discourse coherence and to modality. The notion of discourse coherence does not seem to apply as directly to sentence-initial *man*. However, there is a sense in which it may serve well-defined discourse functions as well. Its strengthening may well involve assisting in resolving whatever question is at issue in a given discourse, and thereby increasing the relevance of the utterance it modifies (Roberts, 1996; van Rooij, 2003b). Given that it strengthens in an expressive manner, though, understanding what is happening here requires an understanding of how expressive content functions in discourse, and what its relation is to relevance and discourse structure (cf. Amaral et al. 2007). These are large questions and cannot be answered here. Understanding them, though, along with a fuller understanding of the range of particle meanings and functions across languages, is necessary for a complete understanding of what particles do.

Acknowledgements So many people have discussed this work and issues relating to it with me over the course of its development that it seems impossible to remember them all. I would like to thank at least Nicholas Asher, Rajesh Bhatt, Bernhard Schwarz, and Carlota Smith; audiences at Aoyama Gakuin

University, Osaka University, the (Dynamic) Semantics Discussion Group, Sinn und Bedeutung 10 and 12, CSSP 2005, J/K 16, LENLS 2, Gunma Prefectural Women's University, and the Workshop on Formal and Computational Approaches to Discourse and Other Particles at the Universitat de Barcelona; and to Adrian Brasoveanu, Cleo Condoravdi, Chris Davis, Pascal Denis, Yurie Hara, Pauline Jacobson, Hans Kamp, Stefan Kaufmann, Manfred Krifka, Kazuo Nakazawa, Alexis Palmer, Chris Potts, Brian Reese, Jessica Rett, Magdalena Schwager, Yukinori Takubo, Chris Tancredi, Shigeo Tonoike, Anna Verbuk, Linton Wang, Henk Zeevat and an anonymous reviewer for this journal for helpful comments.

References

Aikhenvald, A. (2004). *Evidentiality*. Oxford: Oxford University Press.
Amaral, P., Roberts, C., & Smith, E. A. (2007). Review of 'the Logic of Conventional Implicatures' by Christopher Potts. *Linguistics and Philosophy*, *30*(6), 707–749.
Asher, N., & Lascarides, A. (2003). *Logics of conversation*. Cambridge, UK: Cambridge University Press.
Asher, N., & McCready, E. (2007). Were, would, must and a compositional account of counterfactuals. *Journal of Semantics, 24*(2), 93–129.
Barker, C. (2002). The dynamics of vagueness. *Linguistics and Philosophy, 25*(1), 1–36.
Beaver, D. (2001). *Presupposition and assertion in dynamic semantics*. No. 16 in Studies in Logic, Language and Information. Stanford, CA: CSLI/FoLLI.
Beaver, D., & Zeevat, H. (2007). Accommodation. In G. Ramchand & C. Reiss (Eds.), *Oxford handbook of linguistic interfaces*. Oxford: Oxford University Press.
Benz, A., Jäger, G., & van Rooij, R. (Eds.) (2006). *Game theory and pragmatics*. New York: Palgrave.
Boersma, P., & Weenink, D. (2008). Praat: Doing phonetics by computer (version 5.0.03) [computer program]. Developed at the Institute of Phonetic Sciences, University of Amsterdam.
Castroviejo Miró, E. (2006). *Wh-Exclamatives in Catalan*. Ph.D. thesis, Universitat de Barcelona.
Dalrymple, M., Lamping, J., Pereira, F., & Saraswat, V. (1997). Quantifiers, anaphora and intensionality. *Journal of Logic, Language and Information, 6*, 219–273.
Davis, C. (2008). Decisions, dynamics and the Japanese particle *yo*. Manuscript, UMass-Amherst.
Fodor, J. (2002). *Concepts*. Oxford: Blackwell.
Frank, A. (1997). *Context dependence in modal constructions*. Ph.D. thesis, University of Stuttgart.
Gärdenfors, P. (1988). *Knowledge in flux*. Cambridge: MIT Press.
Geurts, B. (1995). *Presupposing*. Ph.D. thesis, University of Stuttgart.
Geurts, B. (1999). *Presupposition and pronouns*. Oxford: Elsevier.
Geurts, B. (2007). Really fucking brilliant. *Theoretical Linguistics, 33*, 209–214.
Groenendijk, J., & Stokhof, M. (1991). Dynamic predicate logic. *Linguistics and Philosophy, 14*, 39–100.
Groenendijk, J., & Stokhof, M. (1997). Questions. In *Handbook of logic and language*. Amsterdam: Elsevier.
Harel, P., Kozen, D., & Tiuryn, J. (2000). *Dynamic logic*. Cambridge: MIT Press.
Jackson, S. (1948). The lottery. In *The New Yorker*, issue of June 26.
Kadmon, N., & Landman, F. (1993). Any. *Linguistics and Philosophy, 16*, 353–422.
Kaplan, D. (1989). Demonstratives. In J. Almog, J. Perry, & H. Wettstein (Eds.), *Themes from Kaplan*. Oxford University Press. Manuscript version from 1977.
Kaplan, D. (1999). The meaning of ouch and oops: Explorations in the theory of *meaning as use*. Manuscript, UCLA.
Kaufmann, S. (2004). A modal analysis of expressive meaning: German *ja* under quantifiers. Handout of talk presented at Kobe Shoin.
Kennedy, C. (1999). *Projecting the adjective*. Garland. 1997 UCSC dissertation.
Kennedy, C. (2007). Vagueness and gradability: The semantics of relative and absolute gradable predicates. *Linguistics and Philosophy, 30*(1), 1–45.
Kiesling, S. (2004). Dude. *American Speech, 79*(3), 281–305.
Klein, E. (1980). A semantics for positive and comparative adjectives. *Linguistics and Philosophy, 4*, 1–45.
Kölbel, M. (2002). *Truth without objectivity*. London: Routledge.
Koyama, T. (1997). Bunmatusi to bunmatu intoneesyon [sentence-final particles and sentence-final intonation]. In *Bunpou to onsei [Grammar and Phonetics]*. Kuroshio Press.

Kratzer, A. (1999). Beyond ouch and oops: How descriptive and expressive meaning interact. Available from Semantics Archive.
Krifka, M. (2001). Quantifiying into question acts. *Natural Language Semantics, 9*, 1–40.
Ladd, D. R. (1996). *Intonational phonology*. Cambridge: Cambridge University Press.
Lasersohn, P. (1999). Pragmatic halos. *Language, 75*, 522–551.
Lasersohn, P. (2005). Context dependence, disagreement, and predicates of personal taste. *Linguistics and Philosophy, 28*, 643–686.
Lewis, D. (1973). Causation. *Journal of Philosophy, 70*, 556–567.
Mastop, R. (2005). *What can you do? Imperative mood in semantic theory*. Ph.D. thesis, University of Amsterdam.
McCready, E. (2005). *The dynamics of particles*. Ph.D. thesis, UTexas-Austin.
McCready, E. (2006a). English sentence-initial *man*. In C. Ebert & C. Endriss (Eds.), *Proceedings of Sinn und Bedeutung 10* (Vol. 44 of *ZASPIL–ZAS Papers in Linguistics*, pp. 211–223).
McCready, E. (2006b). Japanese *yo*: Its semantics and pragmatics. *Sprache und Datenverarbeitung, 30*, 25–34.
McCready, E. (to appear). Particles: Dynamics vs. utility. In Y. Takubo (Ed.), *Japanese/Korean Linguistics 16*. CSLI.
McCready, E., & Asher, N. (2006). Modal subordination in Japanese: Dynamics and evidentiality. In A. Eilam, T. Scheffler, & J. Tauberer (Eds.), *Penn working papers in linguistics 12.1*, pp. 237–249.
McCready, E., & Ogata, N. (2007). Evidentiality, modality, and probability. *Linguistics and Philosophy, 30*(2), 147–206.
Mitchell, J. (1986). *The formal semantics of point of view*. Ph.D. thesis, University of Massachusetts at Amherst.
Muskens, R., van Benthem, J., & Visser, A. (1997). Dynamics. In J. van Benthem & A. ter Meulen (Eds.), *Handbook of Logic and Language* (pp. 587–648). Amsterdam: Elsevier.
Noda, H. (2002). Syuuzyosi no kinoo [The functions of sentence-final particles]. In *Modariti [Modality]*. Tokyo: Kurosio Press.
Nouwen, R. (2007). On appositives and dynamic binding. *Research on Language and Computation*, *5*(1), 87–102.
Ogihara, T. (1996). *Tense, attitudes and scope*. Dordrecht: Kluwer.
Pierrehumbert, J., & Beckman, J. (1988). *Japanese tone structure*. Cambridge, MA: MIT Press.
Pierrehumbert, J., & Hirschberg, J. (1990). The meaning of intonation in the interpretation of discourse. In P. Cohen, J. Morgan, & M. Pollack (Eds.), *Intentions in communication*. Cambridge: MIT Press.
Portner, P. (2004). The semantics of imperatives within a theory of clause types. In R. Young (Ed.), *Proceedings of semantics and linguistic theory 14*. CLC Publications.
Potts, C. (2005). *The logic of conventional implicatures*. Oxford University Press. Revised version of 2003 UCSC dissertation.
Potts, C. (2007). The expressive dimension. *Theoretical Linguistics, 33*, 165–198.
Rett, J. (2008). *Degree modification in natural language*. Ph.D. thesis, Rutgers.
Roberts, C. (1989). Modal subordination and pronominal anaphora in discourse. *Linguistics and Philosophy, 12*, 683–721.
Roberts, C. (1996). Information structure: Towards an integrated formal theory of pragmatics. In *OSUWPL Volume 49: Papers in Semantics*. The Ohio State University Department of Linguistics.
Searle, J. (1969). *Speech acts*. Cambridge: Cambridge University Press.
Siegel, M. E. A. (2002). Like: The discourse particle and semantics. *Journal of Semantics, 19*, 35–71.
Siegel, M. E. A. (2006). Biscuit conditionals: Quantification over potential literal acts. *Linguistics and Philosophy, 29*(2), 167–203.
Stalnaker, R. (1979). Assertion. In P. Cole (Ed.), *Syntax and semantics 9*. New York: Academic Press.
Suzuki Kose, Y. (1997). *Japanese sentence-final particles: A pragmatic principle approach*. Ph.D. thesis, University of Illinois at Urbana-Champaign.
Takubo, Y., & Kinsui, S. (1997). Discourse management in terms of mental spaces. *Journal of Pragmatics, 28*, 741–758.
van Benthem, J. (2004). Dynamic logic for belief revision. *Journal of Applied Non-Classical Logics, 14*(2), 129–155.
van der Sandt, R. (1992). Presupposition projection as anaphora resolution. *Journal of Semantics, 9*, 333–377.
van Rooij, R. (2003a). Negative polarity items in questions. *Journal of Semantics, 20*, 239–273.
van Rooij, R. (2003b). Quality and quantity of information exchange. *Journal of Logic, Language and Information, 12*, 423–451.
Vanderveken, D. (1990). *Meaning and speech acts* (2 Vols). Cambridge University Press.

Villalba, X. (2004). Exclamatives and negation. Technical report, Universitat Autònama de Barcelona. Report de Recerca GGT-2004-02.
von Fintel, K. (1994). *Restrictions on quantifier domains*. Ph.D. thesis, University of Massachussetts at Amherst. Published by GLSA.
von Fintel, K. (1999). NPI-licensing, Strawson-entailment, and context dependency. *Journal of Semantics, 16*, 97–148.
von Fintel, K., & Gillies, T. (2008). Must ... stay ... strong. Manuscript, MIT and University of Michigan.
Wang, L., Reese, B., & McCready, E. (2005). The projection problem of nominal appositives. *Snippets*, *10*, 13–14.
Westmoreland, R. (1998). *Information and intonation in natural language modality*. Ph.D. thesis, Indiana University.
Yamada, T. (2007). Logical dynamics of commands and obligations. In T. Washio, K. Sato, H. Takeda, & A. Inokuchi (Eds.), *New frontiers in artificial intelligence: JSAI 2006 conference and workshops*, LNCS (pp. 133–146). Berlin: Springer.
Zanuttini, R., & Portner, P. (2003). Exclamative clauses at the syntax-semantics interface. *Language, 79*(1), 39–81.
Zimmermann, M. (to appear). Discourse particles in the left periphery. In B. Shaer, W. Frey, & C. Maienborn (Eds.), *Dislocated elements in discourse*. Oxford: Routledge.