Meiosis and hyperbole as scalar phenomena

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Abstract ⋆ Meiosis and hyperbole are phenomena that involve deliberate under- and overstatements that are uttered without the intention to deceive or otherwise break with cooperative communication. Much on the literature on these figures of speech concerns the specific rhetorical roles they play as well as their relation to other tropes, like metaphor and irony. In this work, I intend to study meiosis and hyperbole from a truth-conditional perspective. In particular, building on Walton (2017), I look at how we can define under- and overstatement in terms of the relation between the propositional content and a contextually salient scale. The resulting theory is empirically grounded by empirical tests and formalised in a standard framework of possible world semantics. The advantage of doing this is twofold: (i) it will become possible to provide formal clarity on how to classify certain utterances and (ii) we can make explicit the role semantic content plays in the deliberate utterance of false statements.

1 Introduction

Timid has organised a housewarming party and invited 60 people, expecting around 30 of them to come. In reality, all 60 people showed up and his new living room was extremely packed with people. The next day, he talks to Scarlett, who was at his party. Timid is insecure and asks Scarlett whether she thinks the party was a success. Now consider these two possible responses by Scarlett, who wants to point out to Timid that his insecurity is baseless.

(1) There were a hundred people in your living room.

(2) Your living room was completely empty.

In and by itself these sentences may not seem very felicitous in this context. But with some contextual clues, they become so. Scarlett can use (1) to make her point through exaggeration: *"Are you kidding me? There were a hundred people in your living room! Of course it was a success!"*. For (2), it helps to imagine Scarlett adopting a mocking tone: *"Yes, poor you. What a disaster! Your living room was completely empty!"*.
Used in this way, (1) is a case of hyperbole and (2) a case of meiosis. Hyperbole and meiosis are conversational moves that involve deliberate over- or understatements. These are usually (but not always, see below) false statements. They are different from lies, however, since the goal of these kinds of utterances is not to deceive but, rather, to function cooperatively. Hyperbole and meiosis are normally classified as rhetorical devices. This means that studies of these figures of speech focus predominantly on their rhetorical use and their relation to other rhetorical figures such as irony. Here, I take a somewhat different perspective by

investigating over- and understatements from a truth-conditional perspective. My interest in examples like (1) and (2) is in the question of how to link their propositional content to their classification as a certain kind of figure of speech.

My main concern will be to understand the "over" and "under" in the notions "overstatement" and "understatement". Intuitively, (2) is an understatement because it presents things as somehow "less" than what is really the case. Scarlett "pretends" (for want of a better word, cf. Wilson 2006) there was nobody at the party, when in fact, there were many. Conversely, (1) is a overstatement because the number of party goers is presented to be a lot higher than it really was. These paraphrases of what makes something an over- or understatement suggest that hyperbole and meiosis are *scalar* in nature. By saying that these phenomena are *scalar* I mean that their meaning and use involves some kind of ordering. In particular, this ordering is connected to the semantic content of the uttered sentence. For instance, there is a sense (to be made precise later) in which the sentence "Your living room was completely empty" stands in an ordering relation to "There were a few people in your living room". My goal is to explore to what extent we can have a theory of these figures of speech that defines them not in terms of their pragmatic effect, or rhetorical use, but rather in terms of formal aspects of their semantics and the context of their use.

A lot of the ground work for what I will propose was done by Walton (2017), who proposes an informal scalar philosophy of deliberate over- and understatement. Here, I will aim to improve on that theory and embed it in the standard formal semantic and pragmatic framework. As a direct consequence, I will be able to identify some key differences between under- and overstatement. This is significant, since it shows that even transparently false utterances trigger reasoning about scalar alternatives.

2 Walton's theory of meiosis and hyperbole

There are three ingredients to Walton's theory. They are (i) the *assertive content*, which is (roughly) the actual state of affairs the speaker is alluding to; (ii) the explicit content, which is (roughly, again) the literal meaning of the utterance, potentially enriched with generalised implicatures; and (iii) the *salient contrast*. This latter notion represents some kind of reference point that is or that the speaker wants to make contextually salient.

I will explain these notions, and how Walton believes they can account for meiosis and hyperbole, by using the two examples above. They are repeated here together with an illustration of Walton's notions.

(1) There were a hundred people in your living room! (*hyperbole*)
   a. Explicit content: a hundred people came to the party
   b. Assertive content: many people came to the party
   c. Salient contrast: few people came to the party (expectation)

(2) Your living room was completely empty! (*meiosis*)
   a. Explicit content: no-one came to the party
   b. Assertive content: many people came to the party
   c. Salient contrast: few people came to the party. (expectation)

Walton defines over- and understatement in terms of how the literal meaning (i.e. the explicit content) relates to what he calls salient contrast. An utterance counts as an overstatement whenever the explicit content differs greatly from the salient contrast. It functions

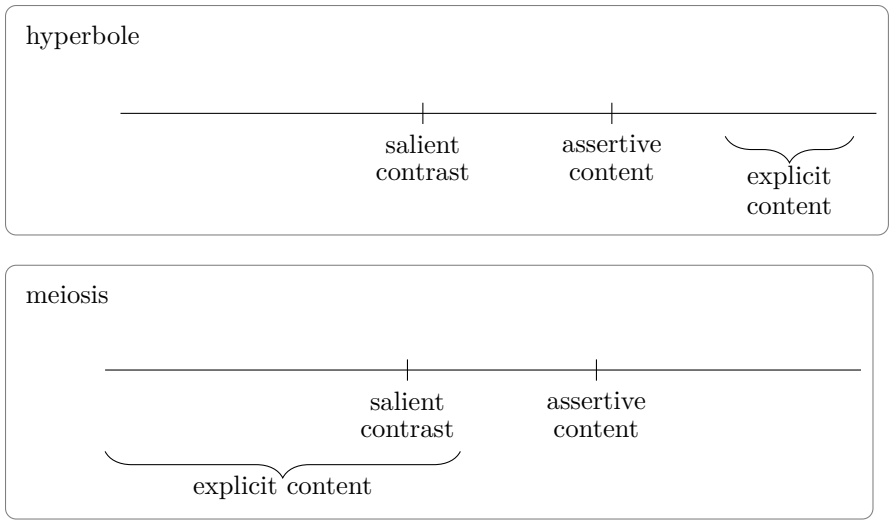


Figure 1: Scalar depiction of hyperbole and meiosis, following Walton 2017

to communicate a similar, yet not as great deviation from this focal anchor. The truth, the assertive content, is between the norm and the literal meaning. An utterance counts as an understatement whenever the deviation from the salient contrast is smaller for the explicit content than for the assertive content, or when this deviation is in the opposite direction. So, Walton's theory says that an overstatement presents the deviation from the focal point to be bigger than it really is, while an understatement presents the deviation to be smaller or altogether different than it really is. In his own words: "[An overstatement] exaggerates the gap between what the speaker means to indicate and what she especially means to deny; [an understatement] collapses this gap." Walton presents this theory using scalar representations, as illustrated in figure 1.

Unfortunately, the assertive content and the salient contrast are rather poorly defined notions. For that reason, I will replace these with notions that can be made formally precise. What I find really attractive in Walton's theory, though, is exactly that it allows us to take this step. By thinking in terms of (truth-conditional) content, two opportunities emerge. First of all, we will be able to use the toolbox of truth-conditional frameworks to classify rhetorical figures much more precisely and objectively. Second, using the logical rigour of truth-conditional semantics and pragmatics, the hope is that we can also account for aspects of over- and understatement that have to do with content. In particular, the hope would be that we can not only determine when something is a case of meiosis, hyperbole or something else altogether, we can also predict the assertive content – the actual inferences drawn by the addressee – as a function of the context and the content of the uttered sentence. To be clear, this last hope is not fulfilled in Walton's theory. Walton does not provide a way to derive the assertive content. Neither is it my focus in this paper. My aim, however, is to provide a framework that, in principle, allows us to study transparently false utterances like cases of meiosis and hyperbole in a formally explicit way. In what follows, I will implement Walton's ideas in a standard truth-conditional formal framework. Then, I will improve on the theory in two steps. First, I will refine the theory by adjusting the definitions of meiosis

and hyperbole to include more cases that, intuitively, fall within these notions. Second, I will show that scalarity can help explain how hyperbole and meiosis differ.

3 Deniable irony and Wayne's test

Given Walton's scalar definitions of meiosis and hyperbole, how do we test whether these make sense? I think two things need to happen. First of all, we need to make the theory more precise and formalise it, so that we remove the vagaries surrounding notions like salient contrast, assertive content, etc. as much as possible. This I intend to do in subsequent sections. The second thing that needs to happen - and this is what I will turn to now - is that we need to find a way to empirically establish which utterances are hyperbolic and which are meiosis.

A key reason why we need something like this is because, if meiosis and hyperbole are scalar in nature, then there will be no natural way to decide the relevant ordering of the scale. Consequently, we won't be able to rely on judgements regarding directionality. For instance, when Scarlett says "your living room was completely empty", we can't just judge this as an understatement simply because we have the intuition that a state of affairs with zero party guests is "lower" on the scale than cases where more guests came. In other words, we have no a priori way of deciding whether Scarlett is understating how many people came or whether she is *over*stating how *few* came. (Walton 2017, page 115, makes a similar point, discussing an example from Gibbs 2007).

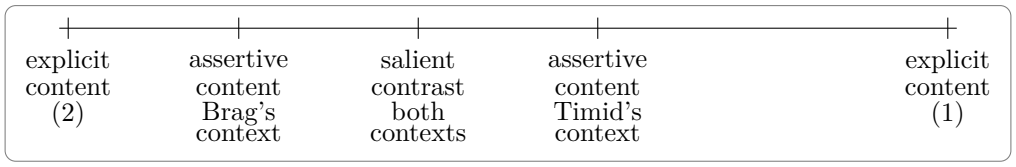
To illustrate this issue, consider a different friend of Scarlett's, called Brag, who also gave a party and also invited 60 people, expecting around 30 guests to attend. In Brag's case, however, only 20 people showed up. Contrary to Timid, however, Brag is telling Scarlett what a success he thought his party was. Scarlett can again use both the sentences in (1) and (2) to counter Brag's claim that things went well:

(1) There were a hundred people in your living room!

(2) Your living room was completely empty!

The difference with earlier, however, is that the sarcastic tone she needed to adopt when uttering (2) addressing Timid should be adopted with (1) when addressing Brag. For instance, she can counter his supposition of success adopting a mocking tone and saying "O yes, what a resounding success it was! There were a hundred people in your living room!". The tone is different with (2): "A success!? Are you kidding me? Your living room was completely empty!".

So how should we now think about these utterances? According to Walton's theory, (1) is an overstatement when Scarlett's addressing Timid, but an understatement when she is addressing Brag; and things are reversed for (2). The reader can check this using the following diagram. Crucially, in Brag's context, the scale should be envisioned as reversed, relative to Timid's context.



But how can we tell whether this is right? Why couldn't we say that (2) is always meiotic and (1) is always hyperbolic? What independent tests have we got to decide whether an utterance is meiosis or hyperbole?

One hint that Walton's theory is on the right track is that the use of irony changes between Scarlett addressing Timid and her addressing Brag. Intuitively, when Scarlett tells Timid "Poor you! Your living room was completely empty!", she is using verbal irony. And that same intuition is present when Scarlett tells Brag (1). Some authors, Walton included, have suggested that irony is one of the things that sets meiosis apart from hyperbole: in contrast to meiosis, hyperbolic utterances are not cases of verbal irony. Yet others disagree and claim that hyperbole falls under irony (e.g. Gibbs 2007). Even if this debate were settled, however, it wouldn't help us towards categorising utterances as one kind of figure of speech or another. This is because I don't know of any objective definition of verbal irony.[1] More importantly, I don't know of any objective empirical test of whether or not something is ironic. So, it seems to me that it would be better if we could avoid intuitions about verbal irony, whatever that may be. This is why I will talk about something that I will call *deniable irony*, instead. This phenomenon covers some (but most probably not all) cases of what people have called irony, but importantly it comes with an empirical test, so that we can easily connect it to intuitions. Crucially, I will claim that meiosis involves deniable irony, while hyperbole does not.

Deniable irony is a pragmatic phenomenon where a false utterance can be denied by the speaker, without changing the underlying communicative intention. So, deniable irony is a property of an utterance that is being used to make salient something that is not the case by presenting it as being true. The utterance has this property if and only if a subsequent utterance can reveal or explicate this falsehood by denying the first utterance. That is, an utterance involves deniable irony if the speaker can contradict herself without altering the speech act. To test deniable irony, I propose to use a mechanism that I call Wayne's test. Let me illustrate how this test works by going through an example. Say Sue is complaining to Sam that her salary raise was less high than she expected it to be. Sam didn't get a raise at all, as Sue well knows, and he's hurt that Sue doesn't realise that her complaint is difficult to sympathise with for him. He can now utter (3).

(3) I feel so sorry for you.

He can make this utterance in two quite distinct ways. Uttered plainly, (3) would be a disingenuous statement of sympathy. Used ironically, however, (3) could be used by Sam to indicate towards Sue how displeased he is with Sue's insensitivity. The irony involved here is deniable, as can be shown by Wayne's test. The test involves adding "…Not!" to the utterance and testing whether that addition alters the function of the original utterance. In this case, adding "Not" maintains (in fact, strengthens) the demonstration of annoyance, and, so, the ironic use of (3) contains deniable irony.

(4) I feel so sorry for you… Not!

If we apply Wayne's test to cases of meiosis and hyperbole, then we see that the examples

[1] Walton proposes that one minimum requirement for irony is that the explicit content of the utterance entails the salient contrast. I think this idea is not clearly right in some cases. As we've seen, Scarlett addressing Timid can understate things by saying "Your living room was completely empty!". Does this sentence entail the salient contrast? Well, it depend on whether we think the salient contrast is "a few people attended the party" or "few people attended the party". The entailment is there only in the latter case. However, we have no way of deciding which of the two the salient contrast is.

classified as the former involve deniable irony. For instance, in the context of Timid's housewarming party, Scarlett's understated response could have been extended as follows:

(5) Yes, poor you, I'm not sure it was a success. Your living room was completely empty…Not!

The case of hyperbole does not involve deniable irony, though, as can be illustrated by the unacceptability of the "…Not!" rider in (6) when addressing Timid.

(6) Are you kidding me? There were a hundred people in your living room#…Not!

I should clarify what I mean with "unacceptability" (indicated by the "#"). In this context, the addition of "…Not!" changes the intended meaning of the preceding sentence. That is, the hyperbolic sense of this example disappears and instead some other meaning emerges (if a meaning emerges at all), one where you reveal the truth to be that there were rather few people. So, the unacceptability is this: the hyperbolic understanding of "There were a hundred people in your living room" does not involve deniable irony, so the subsequent denial is incompatible with that understanding.

Let me illustrate this with another example. Say I praise someone's baking skills by saying "That was the best cake I've ever had". This is arguably a case of hyperbole, I am overstating how much I liked the cake. Is this a case of irony? I don't know, because I don't know what you mean by irony. But I can show it is not a case of *deniable irony*, for as soon as I deny the utterance, the speech act is altered. If we assign a praising interpretation to the first part of (7), then the continuation with "…Not!" is infelicitous. Put the other way around: the addition of the denial rules out the praising understanding of the initial utterance.

(7) That was the best cake I've ever had…Not!

Once again, I don't know whether hyperbole involves irony. But I do know this: if it does involve irony, this is not irony of the deniable kind.

We are now at a point where we can test Walton's predictions for Brag's context. These were that Scarlett's utterance of "Your room was completely empty" is hyperbolic and her utterance of "There were a hundred people in your living room" is meiotic. So, the latter should contain deniable irony and the former should not. This is indeed the case. In Brag's context, where fewer guests showed up than expected, Brag's boast that the party was a success can be countered as in (8).

(8) Oh yes, your party was a huge success. There were a hundred people in your living room!… Not!

But Scarlett couldn't do the same with the hyperbolic claim that the living room was empty:

(9) Are you kidding me? Your living room was completely empty!…#Not!

Note that I used the term *deniable irony* as a pragmatic phenomenon, rather than as a kind of irony. It is clearly related, however, to what in the literature is called *impersonation* or *pretence irony* (e.g. Currie 2006; Simonin 2018). This is the kind of irony that involves the speaker transparently taking on a false persona. This kind of irony involves deniable irony because the intention is that the addressee recognises the false pretence. In other words,

denying the false utterance allows the speaker to switch back to her genuine persona.

Meiosis of the kind we've been looking at so far – i.e. (2) when addressing Timid and (1) when addressing Brag – involves pretence. Scarlett is temporarily pretending to be respectively Timid and Brag to highlight the silliness of the claims they made about their party. As a consequence, these cases of meiosis contain deniable irony. The hyperbolic utterances do not contain pretence and, as such, do not contain deniable irony. Below, we'll turn to the question why this is. For now, however, the upshot is that whenever we are in doubt whether something is meiosis or hyperbole, we have access to an empirical test that can help us decide.

There is a complication, however. There is one prominent phenomenon that is often classified as meiosis that does not involve deniable irony. Also, this phenomenon is not (straightforwardly) predicted to be meiosis on Walton's theory. Consider the following examples:

(10) Tim Henman is not the most charismatic tennis player in the world. (Wilson, 2006)

(11) That could have gone better. (When everything went wrong)

(12) Well, your living room wasn't empty. (Scarlett to Timid)

(13) Well, not everyone came. (Scarlett to Brag)

These examples have in common that they are all true in the intended context. Tim Henman is known to be relatively uncharismatic and, so, he is not the most charismatic tennis player in the world. When everything goes wrong, things could have gone better. Neither was Timid's living room empty, nor did all the invited guest come to Brag's party. As such, none of these utterances can involve (deniable) irony.

Walton's theory doesn't predict these utterance to be meiosis either (although I think it is his intention to make this prediction). The explicit contents of these examples are extremely general, covering all the scale, except for one particular point (being the most charismatic, everything going right, nobody showing up, everyone showing up). Given that, it is hard to decide whether the "the gap between what the speaker means and what she especially means to deny" is exaggerated or collapsed.

Key to understanding these utterances, I think, is to look at the role of denial in all this. The examples above are cases that deny the propositional content of cases of deniably ironic meiosis. For example, Scarlett can highlight Timid's success in three related ways: (2), which deniably ironically says that his living room is empty; (14), which combines (2) with an overt demonstration that (2) is false; or (12) where this falsehood is expressed in a single proposition.

(2) Your living room was completely empty!

(14) Your living room was completely empty!...Not!

(12) Your living room wasn't empty!

In what follows, I will distinguish between *strong meiosis* and *weak meiosis*. The former kind is exemplified in (2). The latter kind is exemplified in (12).[2] Given this we can formally distinguish three figures of speech:

[2]The example in (14) could be seen as strong followed by weak meiosis.

figure	deniable irony	truth value
weak meiosis	no	true
strong meiosis	yes	false
hyperbole	no	false

The idea is that this table will give us some much needed empirical grounding. In the next section I will formalise Walton's theory, tweak it and test it on the meiosis/hyperbole distinction, as given in this way.

4 A formal implementation

In what follows, I will assume the standard possible world framework of formal theories of truth-conditional meaning and the functions that such meanings play in language use (e.g. Stalnaker 1978; Roberts 2012). In particular, I take there to be a space of possible worlds $\mathcal{W}$ and I assume that the goal of linguistic exchanges is to navigate that space. I further assume that each utterance is targeting a *question under discussion*, which models the goal of the utterance, namely the information-seeking question that the utterance is intending to (partially) answer.

Technically, a QUD can be seen as a partition of the space of possible worlds. One way to look at the QUD is to see it as the set of equivalence classes that make the same answer to the question under discussion true. For instance, a QUD: "how many people showed up at the party?" is a set of sets such that each set in the QUD contains all and only worlds that agree w.r.t. how many people attended the party. Let μ be a function that takes a world and returns the number of people present. Then, the QUD is defined in terms of the following relation:

$$R_\mu \;:=\; \{(w, w') \mid \mu(w) = \mu(w')\}$$

$$\mathcal{Q}_{R_\mu} \;:=\; \{[w]_{R_\mu} \mid w \in \mathcal{W}\}$$

The function μ is connected to a measurement scale in the sense that the values it maps to form an ordered set $\langle \mathbb{N}, > \rangle$ (Solt, 2015). In extension, natural language expressions that contribute to answering the QUD are scalar in the sense that they are ordered in terms of informativity. For instance, "more than 3 people came" expesses $\mu > 3$ and "more than 4 people came" expresses $\mu > 4$. This means that the set of cells compatible with the former is bigger than the set compatible with the latter (since it contains the cell of worlds in which 4 people passed in addition to all the cells compatible with "more than 4"). So, we have an informativity scale:

(15) more than 3 people came $<$ more than 4 people came $<$ etc.

and similarly,

(16) fewer than 3 people came $>$ fewer than 4 people came $>$ etc.

The scalar phenomena studied most in natural language (especially, *scalar implicature*) concern informativity (i.e. entailment) scales like these. That is, the scalarity is present on the level of sentence (or word) meaning. Even without thinking of informativity, scales matter however. For instance, "Exactly twenty-two people came" is not in and by itself more or less informative than "Exactly six people came". The truth-conditions of these sentences just point to different independent cells in the partition. Still, we have an intuition that the

sentences are ordered by virtue of their meaning linking to points on the scale imposed by μ, and that ordering is relevant for all sorts of considerations. This is mostly because such orderings align to independent judgements we make (Geurts, 2010, 2013). For instance, we may think that more people is better and, so, "Exactly twenty-two people came" describes a preferred state of affairs over "Exactly six people came". Or, if we expect few people to come then the latter sentence is more likely to be true than the former. In other words, the underlying scale, inherited from the measure function μ, may be relevant for a myriad of possible reasons.

For a formal version of Walton's theory of meiosis/hyperbole, we also need to have access to the scale, but the sentence meanings themselves are not ordered through informativity. Consequently, we need to assume that the ordering on the range of μ is also effective on the cells of the QUD partition. In other words, the QUD is not just a partition, but an ordered set as well. Let f be some function $f : \mathcal{W} \to X$ and assume that the QUD is a question that wants to answer what the value of f really is. If X is ordered, then the QUD is ordered as well.

$$\begin{array}{ll} \text{Let} & f : \mathcal{W} \to \langle X, < \rangle \\ \text{then} & R_f \;:=\; \{(w, w') \mid f(w) = f(w')\} \\ & \mathcal{Q}_{R_f} \;:=\; \langle \{[w]_{R_f} | w \in \mathcal{W}\}, \{([w]_{R_f}, [w']_{R_f}) | f(w) < f(w')\} \rangle \end{array}$$

I will write $\prec$ and $\succ$ for the ordering on cells. The resulting ordering on sets of possible worlds can now be used to approach Walton's theory more formally.

Let a context C be a triple $(\mathcal{Q}, n, h)$ with $n, h \in \mathcal{Q}$ where n is the cell in $\mathcal{Q}$ that is expected to contain the actual world in that context and h is the cell that does contain the actual world. Let's also (simplistically) consider only sentences that are compatible with a single cell. For any statement M, this cell is given by $\tau_{\mathcal{Q}}(M)$. We can now have our first definitions:

Hyperbole (Walton) An utterance of a sentence M in context $(\mathcal{Q}, n, h)$ counts as hyperbole if and only if (i) $n \prec h \prec \tau_{\mathcal{Q}}(M)$ and (ii) the scalar distance between h and $\tau_{\mathcal{Q}}(M)$ is big (compared to the distance between n and h)

Meiosis (Walton) An utterance of a sentence M in context $(\mathcal{Q}, n, h)$ counts as meiosis if and only if (i) $n \prec h$ and (ii) the scalar distance between $\tau_{\mathcal{Q}}(M)$ and n is small (compared to the distance between n and h) or negative

These definitions follow the spirit of Walton's theory: hyperbole presents the difference between norm and reality to be bigger than it really is, while meiosis presents it to be smaller than it really is. For several reasons these definitions are quite crude formalisations. I'll start with a reason why the above definitions are too simplistic. Naturally, there isn't a neat one-to-one mapping from sentences to cells in a partition. Propositions expressed by a sentence often only partially resolve questions under discussion. So, we should assume that τ_Q is a function that takes a sentence M and returns a subset of $\mathcal{Q}$, namely $\{[w]_R | w \in [\![M]\!]\}$, where $[\![M]\!]$ is the intension of M and R is the equivalence relation underlying $\mathcal{Q}$.

When a statement is particularly uninformative (relative to the QUD), it is compatible with many of the cells in the QUD partition. For instance, a statement like "more than one person came to the party" is compatible with all but two cells in the partition relevant for the housewarming party context. So, it is also compatible with cells that are far higher on the partition scale than the norm n is. But statements like these do not feel like hyperbole. In other words, we need to make sure that only statements that exclusively point to gross deviations from the norm classify as overstatement.

Hyperbole (version 2) An utterance of a sentence M in context $(\mathcal{Q}, n, h)$ counts as hyperbole if and only if $n \prec h$ and $\forall c \in \tau_{\mathcal{Q}}(M)$: $h \prec c$ and the scalar distance between h and c is big (compared to the distance between n and h)

Interestingly, uninformative statements *do* classify as meiosis. Typically, cases of weak meiosis involve under-informative true propositions. For instance, (12) can be used as an understatement in response to Timid. Once more this example seems to function to draw attention to the fact (in the common ground) that there were actually a lot of people.

(12) Well, your living room wasn't empty.

In such cases, the weak meiosis completely downplays the deviation by the norm, by asserting something that is broadly compatible with many states of affairs including both the norm and the actual state. As a consequence, our definition for meiosis should be quite broad:

Weak Meiosis An utterance of a sentence M in context $(\mathcal{Q}, n, h)$ counts as meiosis if and only if $n \prec h$ and $\exists c \in \tau_{\mathcal{Q}}(M)$ such that the scalar distance between c and n is small (compared to the distance between n and h)

This definition accounts for weak meiosis, but not for strong meiosis. When Scarlett says to Timid that his living room was completely empty, she is using a proposition that points at an extreme cell on the scale.

Strong Meiosis An utterance of a sentence M in context $(\mathcal{Q}, n, h)$ counts as meiosis if and only if $n \prec h$ and $\forall c \in \tau_{\mathcal{Q}}(M)$: $c \prec n$ and the scalar distance between c and n is large compared to the distance between c and h

As we saw with Brag's context, the direction of the ordering does not really matter. An overstatement does not need to be a statement that involves "more" of something than really is the case – it could just as well be "fewer". For this reasons, our final set of definitions are agnostic to direction.

Hyperbole (final) An utterance of a sentence M in context $(\mathcal{Q}, n, h)$ counts as hyperbole if and only if $n \lhd h$ and $\forall c \in \tau_{\mathcal{Q}}(M)$: $h \lhd c$ and the scalar distance between h and c is big (compared to the distance between n and h), with $\lhd \in \{\prec, \succ\}$

Weak Meiosis (to be abandoned) An utterance of a sentence M in context $(\mathcal{Q}, n, h)$ counts as weak meiosis if and only if $n \lhd h$ and $\exists c \in \tau_{\mathcal{Q}}(M)$ such that the scalar distance between c and n is small compared to the distance between c and h, with $\lhd \in \{\prec, \succ\}$

Strong Meiosis (final) An utterance of a sentence M in context $(\mathcal{Q}, n, h)$ counts as strong meiosis if and only if $n \lhd h$ and $\forall c \in \tau_{\mathcal{Q}}(M)$: $c \lhd n$ and the scalar distance between c and n is large compared to the distance between c and h, with $\lhd \in \{\prec, \succ\}$.

The definitions for hyperbole and strong meiosis single out the specific circumstances that hold with these figures of speech. The definition of weak meiosis is so weak, however, that it probably applies too often. One way to see this is to look at the relation between weak and strong meiosis. If M is a case of strong meiosis in C, then $\neg M$ is a case of weak meiosis in C. If all the worlds in $\tau(M)$ are far from n, then it must be the case that $n \in \tau(\neg M)$ and, so, there's at least one cell in $\tau(\neg M)$ that is close to n. This is how it should be: (12) is the negation of (2), where (2) is strong meiosis and (12) is weak meiosis when addressing Timid.

(12) Your living room wasn't completely empty.

(2) Your living room was completely empty.

But note that the following also holds: if M is a case of hyperbole in C, then it follows that $\neg M$ is weak meiosis in C. This is less desirable: (2) is hyperbolic in the Brag context, but (12) is not a case of weak meiosis when addressing Brag. This suggests that the relation between weak and strong meiosis needs to be explained. I turn to this next.

5 Irony and Strengthening

Both strong meiosis and hyperbole involve uttering false statements and both are meant to be false in a transparent way. Why then does the former involve deniable irony, but not the latter? I think scalarity can provide us with the tools to start to understand this.

Scales facilitate pragmatic reasoning. In particular, weak statements – i.e. statement compatible with large regions of the scale – tend to be understood as pertaining to quite specific scalar values. The most well-known example of this is scalar implicature. If I claim that not everyone came to my party, the proposition I am expressing is compatible with all QUD cells, except for the top one. In particular, it is compatible with the other extreme of the scale: cases where no-one attended the party. Uttering this statement, triggers the implicature that this other extreme is not the case. So, "*not everyone*" implicates "*not no-one*".

This is not the only inference triggered by weak scalar statements, however. In a phenomenon often called "negative strengthening" (e.g. Horn 1989), a weak scalar statement is interpreted as referring to a state of affairs that is close to what a scalar implicature would deny. For instance, strengthening "not everyone came" produces the inference that only few people came. Image, for instance, uttering this in a scenario in which you are carefully trying to convince someone that their party was attended poorly, without having to bluntly state that.

Adjectives give rise to particularly clear cases of strengthening. For instance, saying that you don't have very good news, is usually interpreted as the news being bad. This is clearly a case of weak meiosis. The speaker is saying something rather weak, but true. It is compatible with both the norm and the actual state of affairs. In fact, our running example of weak meiosis is an example of where strengthening applies. When Scarlett claims "your living room wasn't empty" in response to Timid's insecurity, she's inviting him to strengthen this to "the living room was rather full". Similarly, Scarlett can state "not everyone came" to Brag to get him to acknowledge that, in fact, only few people came. It seems then that weak meiosis and strengthening go hand in hand. I don't have a good explanation of why this is, but I'd like to simply take this as an empirical fact and use it to explain the distribution of deniable irony.

Strong meiotic statements and weakly meiotic ones are contradictories. The weak meiosis counterpart (12) of the strong meiosis use of (2) is simply its negation.

(2) Your living room was completely empty.

(12) Your living room wasn't completely empty.

My hypothesis is that the function of deniable irony *is* denial. The ironic utterance of (2) proffers the proposition expressed by (12) and, by doing so, (2) is conveying the strengthened

meaning of (12). In other words, the goal of deniable irony in strong meiosis is to invite a strengthening inference by claiming (through denial) something quite weak.

This, I claim, is exactly why there is no deniable irony in hyperbole. Yes, hyperbolic statements are false, but they are not ironic in this specific sense. This is because if they were ironic in this way, they would invite inferences that are in opposition to the goal of hyperbole. This is what we saw in the application of Wayne's test. The sentence in (2) is hyperbolic when uttered in Brag's context. If, however, I impose deniable irony on this statement, by applying the rider of Wayne's test, I automatically trigger the strengthening inference.

(14) Your living room was completely empty…Not!

This effectively conveys that many people came, which is incompatible with the scenario.

6 Conclusion

In this short paper, I have proposed to approach over- and understatements from a scalar formal framework. This framework allows us to provide explicit definitions that determine which transparently false statements count as overstatement and which count as understatement. I've also proposed an empirical test to ground predictions made by these definitions. Ultimately, my hope is that a relatively simple framework like the above will allow further study of deliberately false utterance and connected phenomena, like irony, utilising the formal rigour that truth-conditional semantics brings along.

There is one ingredient of the theory that I've so far failed to discuss in sufficient detail. In the definitions above, I assume that any context has a clearly defined norm, which happens to correspond to a single cell in the question under discussion. This is quite clearly too simplistic. It is much more accurate to think of norms stochastically. However, I don't think this really matters drastically, as long as we find a good method of calculating deviance from the norm.

In fact, the kind of framework I've been using in this proposal is straightforwardly transposed to a stochastic one, if we see the space induced by the question under discussion as the event space for relevant distributions. This would independently be an attractive move since there exist powerful probabilistic theories of why and when interlocutors prefer true and informative statements and when they prefer statements where the communicative goal is rather different (Kao et al., 2014; Yoon et al., 2020). As such, the current proposal connects straightforwardly to predictive theories of language use. I think this is an important development, since it links the philosophy of rhetoric, a traditionally descriptive field about made-up examples, to models of actual language use.

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