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Is Hyperbole a Scalar Inference?[♣♥]

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1. Introduction

A hyperbole is an exaggerated statement that isn't meant literally and is typically used to convey affect. For example, I may utter 'The water in the bath is boiling', despite knowing that the water in the bath isn't boiling, to communicate that the water in the bath is very hot and, furthermore, that I am unhappy about this. Kao et al. (2014) constitutes, to my knowledge, the first (and only) attempt to derive hyperbole interpretations using formal methods. In this note, I argue that this attempt is unsuccessful. In addition, I make three empirical observations that appear to suggest that scalar alternatives are implicated in the process of hyperbole interpretation.

2. Kao et al. (2014)

This account, which is couched within the Rational Speech Act (RSA) framework (Frank and Goodman 2012), has two distinctive features. First, it assumes that utterance interpretation operates along two dimensions (formalised as QUDs)—namely, the state-of-the-world dimension (e.g. *How much money does Bob owe you?*) and the speaker-affect dimension (*Does the speaker have affect*?);[1] in addition, it assumes that the speaker chooses her utterances to maximise the probability of accomplishing her goals, which can be either communicating information along the state-of-the-world dimension, communicating information along the speaker-affect dimension, or communicating both. The basic idea, in plain English, is the following:

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[1] This distinction raises a conceptual issue (and issue which I will ignore here): in what sense is information relative to the speaker's affective state not information about the world?

(i) The speaker utters Bob owes me $1,000,000. (ii) 'This can't be true!', the listener says to herself. 'The speaker is surely trying to communicate something else other than state-of-the-world information.' (iii) 'If the speaker was in a world in which Bob owes me $1,000,000 was true', the listener reasons, 'she'd be, almost certainly, unhappy.' (iv) 'Voilà', the listener concludes, 'the speaker is trying to tell me she's very unhappy (i.e. the speaker is trying to communicate her affect).' (v) 'And, surely, if the speaker is very unhappy, then Bob must owe her a significant amount.'

2.1. Problem I

Step (v) works provided that the *only* reason for the speaker to have negative affect is Bob owing her money—see Bergen (2016:145-150), who presents a model with this feature. In a *realistic* model, however, the listener won't be able to infer that Bob owes the speaker a lot of money from the fact that the speaker has negative affect: this is because, in a realistic model, there is more than just one reason why someone may have negative affect (e.g. failing an exam, breaking an arm). Thus, the actual interpretation that the reasoning in (i)-(v) derives for 'Bob owes me $1,000,000'—or any other hyperbolic statement—is the following: 'the speaker has (positive/negative) affect and something that justifies the speaker having (positive/negative) affect is the case.' This is obviously too weak.

2.2. Problem II

Kao et al.'s (2014) account is global in nature: as far as the uttered sentence goes, it sees nothing else but its literal meaning (i.e. a proposition). On this account, therefore, the following contrast can't be explained:

(1) a. This exercise is impossible to solve. (H ✓)
b. This exercise doesn't have a solution. (H ✗)

(1a) and (1b) are (arguably) truth-conditionally equivalent; however, (1a), but not (1b), supports hyperbole. Furthermore, if one adopts Kao et al.'s (2014) perspective, it's not clear how to account for the fact that (2a), but not (2b), works as an exaggeration ((2b) is just a plain lie).

(2) a. Chomsky wrote thousands of books. (H ✓)
b. Chomsky won the Nobel Prize. (H ✗)

Indeed, according to Kao et al. (2014), it should be possible to interpret (2b) hyperbolically—like (2a), it is extremely unlikely to be true and evokes high-affect worlds.

2.3. Problem III

Probabilistic conditioning is at the heart of Kao et al. (2014): the listener learns about the speaker's affect state by conditioning the common prior on the proposition that the uttered sentence expresses. The following utterances, therefore, constitute a problem for this approach:

(3) a. He broke an unbreakable chair. (≈ *He broke a chair that is very hard to break*.)
b. He solved an unsolvable problem. (≈ *He solved an exercise that is very hard to solve*.)

Indeed, (3a-b), on any reasonable semantics, are necessary falsehoods (in probability talk, $P([\![(3a)]\!]) = P([\![(3b)]\!]) = 0$). Thus, if fed with (3a-b), Kao et al.'s (2014) model will fail to derive the attested interpretations: it's just not possible to condition P on p in cases in which $P(p) = 0$ (in such cases, $P(\cdot \mid p)$ is undefined).

3. Is hyperbole a scalar inference?

Hyperbole can be viewed, at least in part, as a *weakening problem*,[2] i.e. how come that from 'All my friends have girlfriends' we can infer, under the right epistemic conditions, *Most of my friends have girlfriends* and not, for example, *All my friends have girlfriends or it's raining in Paris*? The conjecture I want to put forward is this: If S can be used hyperbolically to convey that S′ is the case, then S′ (or a sentence that is contextually equivalent to S′) must be a scalar alternative of S.[3] In what follows, I present some of the observations that led me to formulate this conjecture.

[2] The other part of the problem involves explaining hyperbole's affective component.
[3] Three remarks: (i) I intend the expression 'scalar alternative' to be understood in a theory-neutral way: those alternatives that need to be generated by some mechanism or other to derive so-called scalar implicatures. (ii) Note that this conjecture explains hyperbole's weakening problem only partially: not all alternatives can serve as landing site for the hyperbole inference ('*p* and *q*' cannot hyperbolically convey '*p* or *q*'); being an alternative may be necessary but doesn't seem to be sufficient to qualify as a possible interpretation of a hyperbolic statement. (iii) 'John is a pyramid/tower/giraffe' can be seen as counterexamples to this conjecture: for example, from Horn's (1972) perspective, these sentences don't have a scalar alternative that is contextually equivalent to 'John is very tall' (the perceived interpretation). Note, however, that constructions such as these can in principle be viewed as metaphors, that is, as manifestations of (arguably) a different empirical phenomenon.

3.1. Indirect implicatures

As discussed in §2.2., (1a) can be interpreted hyperbolically; (1b), by contrast, cannot. Now, consider (4a-b)—the negations of (1a-b), respectively:

(4) a. This exercise isn't impossible to solve.
b. This exercise has a solution.

(4a) carries the (indirect) implicature that the exercise is difficult; (4b), by contrast, doesn't. The observed parallelism, if viewed through the lens of the proposed conjecture, is not at all surprising: (4a), and not (4b), implicates that the exercise is difficult because (4a), unlike (4b), has the alternative 'The exercise isn't difficult to solve'; likewise, (1a), and not (1b), can be interpreted hyperbolically as meaning 'The exercise is difficult to solve' because (1a), unlike (1b), has the alternative 'The exercise is difficult to solve'.

3.2. Hurford Disjunctions

Consider the examples in the table below:

	Good Hurford sentences	**Hyperbole available**
(5)	a. Is this exercise difficult or impossible?	a′. The exercise is impossible!
	b. Don't eat beef that is undercook or raw.	b′. The beef is raw!
	c. She read some or all these books.	c′. She read all these books!
(6)	**Bad Hurford sentences**	**Hyperbole unavailable**
	a. # Has John eaten a piece of fruit or an apple?	a′. John ate an apple!
	b. # John has either a sibling or a brother.	b′. John has a brother!

The observation here is that the stronger item in a 'good' Hurford disjunction (highlighted in blue) can be used hyperbolically (as illustrated in the second column); by contrast, the stronger item in a 'bad' Hurford disjunction cannot. This parallelism suggests that the computation of scalar implicatures and hyperboles are related at some level (here I'm assuming that a Hurford disjunction, when good, is good because a scalar implicature breaks the entailment between the disjuncts; cf. Chierchia et al. 2008).

3.3. Numerals

On neo-Gricean approaches to number interpretation, 'Three boys *blah*' is (typically) analysed as having weak truth-conditions (*At least three boys blah*) and the upper-bounded component of the meaning (*No more than three boys blah*) as a scalar implicature (Horn 1972). This analysis isn't uncontroversial but has considerable empirical support—see Spector (2013) for discussion. Now, consider (7):

(7) a. Chomsky wrote 10,000,000 books. (H ✓)
b. Chomsky wrote at least 10,000,000 books. (H ✓)
c. Chomsky wrote exactly 10,000,000 books. (H ✗)

(7a-b) support hyperbole, whereas (7c) doesn't. On the analysis just sketched, (7a)'s literal meaning is the same as (7b)'s literal meaning. Under the standard assumption that numerals compete with each other ('10,000,000' evokes other numerals), both (7a-b) are bound to have weaker alternatives (e.g. **'**Chomsky wrote (at least) 10 books'). If hyperbole interpretation involves weakening the literal meaning of the uttered sentence, and the attested weaker interpretation corresponds to a scalar alternative of this sentence (by conjecture), then a plausible account of the contrast reported in (7) emerges: if one assumes that the scalar alternatives of (7c) can only be derived by replacing '10,000,000' by another bare numeral, then (7c), unlike (7a-b), has no weaker alternatives.

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