A New Diagnostic for Antonym Decomposition

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Introduction. In recent years, it has become increasingly common to decompose what have been called 'marked members of antonym pairs' into a negation operator and the corresponding unmarked pair member (henceforth: *negative* and *positive adjectives*, cf. Büring 2007, Heim 2006; 2008). This approach contrasts with theories that, at least implicitly, assume the negative component in adjectives is lexicalized in their core meaning. We argue, based on evidence from Modern Hebrew reduplication, that we need a mixed analysis incorporating both approaches: some negative adjectives must be syntactically decomposable, while others are syntactically simplex. We test our analysis by examining cross-polar anomalies and Rullmann ambiguities.

Puzzle 1. In Hebrew, $C_1VC_2VC_3$ adjectives undergo reduplication into $C_1(V)C_2aC_3$-C_2aC_3. (The process is productive in the sense that speakers have clear intuitions about the meanings of reduplicated forms, even when judged marginal.) Surprisingly, reduplication results in an intensified meaning (*A*-REDUP 'more A than A') in some cases (1), but an attenuated one (*A*-REDUP 'A-ish') in others (2).

(1) *katsar* 'short' $\xrightarrow{\text{redup.}}$ *ktsar-tsar* 'very short'
    ha-sipur ktsar-tsar. ⇒ *ha-sipur katsar.*
    the-tale short-REDUP   the-tale short
    'The tale is very short.' ⇒ 'The tale is short.'

(2) *arox* 'long' $\xrightarrow{\text{redup.}}$ *arax-rax* 'long-ish'
    ha-sipur arax-rax. ⇏ *ha-sipur arox.*
    the-tale long-REDUP   the-tale long
    'The tale is long-ish.' ⇏ 'The tale is long.'

We show that the results of reduplication are partially determined by the polarity of the adjective the operation targets. Generally, the meaning of positive adjectives is attenuated, while that of negatives ones is intensified. This puzzle can be simply solved by adopting a decomposition analysis of antonymic pairs. Following Büring and Heim, we assume that negative adjectives decompose into the negative operator in (3) and their positive counterpart. We analyze REDUP as a function that takes a degree adjective as input and diminishes its degree argument by a contextually supplied degree d', as in (4).

(3) $[\![\text{LITTLE}]\!] = \lambda A_{d,et}.\lambda d_d.\lambda x_e [\neg A(d)(x)]$

(4) $[\![\text{REDUP}]\!] = \lambda d'_d.\lambda A_{d,et}.\lambda d_d.\lambda x_e [A(d -_A d')(x)]$,
    where $-_A$ is a relation of subtraction relative to the scale A denotes, as defined in Kennedy (2001).

Attenuation in the case of positive adjectives immediately follows, while intensification in negative adjectives is explained by scoping LITTLE above REDUP. This scope is crucial; otherwise, REDUP would operate on [LITTLE *A*]. Since LITTLE effectively flips the ordering of *A*'s scale, diminishing degrees on this flipped scale is equivalent to augmenting them on the original scale. Thus, applying REDUP to the negated form will augment the degree to which *A* holds of *x*, incorrectly predicting an *-ish* meaning.

Puzzle 2. However, reduplication does not yield uniform results for all antonyms. For certain negative adjectives, e.g. (5), reduplication results in attenuation. To maintain a unified semantics for REDUP, we must stipulate that such negative adjectives are non-decomposable, or that their parts are inaccessible to manipulation in the syntax. We will call this set of recalcitrant adjectives *fake antonyms*, presented alongside *true antonyms* in the table below.

(5) *namux* 'short' $\xrightarrow{\text{redup.}}$ *nemax-max* 'short-ish'
    Dani nemax-max. ⇏ *Dani namux.*
    Dani short-REDUP   Dani short
    'Dani is short-ish.' ⇏ 'Dani is short.'

(*namux*'s positive counterpart, *gavoa* 'long', lacks a reduplicated form due to templatic constraints.)

True antonymic pairs		Fake antonymic pairs	
ktsar-tsar ∼ *arax-rax*	*ktan-tan* ∼ *gadal-dal*	*nemax-max* ∼ ∅	*yevaʃ-vaʃ* ∼ *retav-tav*
'very short' ∼ 'long-ish'	'very small' ∼ 'big-ish'	'short-ish' ∼ ∅	'dry-ish' ∼ 'wet-ish'

Predictions. *Prima facie*, the stipulation required to solve Puzzle 2 seems to cast doubt on the account of REDUP presented so far. However, this stipulation makes testable predictions. In particular, decomposition has been invoked to account for certain comparative constructions.

If we are correct that negative adjectives which are not intensified under reduplication are non-decomposable, these adjectives are predicted to be unacceptable in those constructions.

Cross-polar anomalies in subcomparatives. Büring (2007) notices a contrast between POS-NEG and NEG-POS subcomparatives. While the former are deviant (6), the latter seem acceptable (7).

(6) *The rope is longer than the gap is narrow.   (7) The rope is shorter than the gap is wide.

Both Büring and Heim account for the acceptability of (7) by invoking adjective decomposition. On Heim's implementation, for instance, the negative adjective in the utterance decomposes into its positive counterpart and a *little* morpheme, which has a matching negative operator in the embedded clause. To account for the fact that the adjective in the embedded clause appears to be positive, Heim assumes PF elides the LITTLE morpheme in that clause. Ellipsis is licensed due to the presence of an antecedent LITTLE morpheme in the matrix clause.

We predict that fake antonyms are unacceptable in NEG-POS subcomparatives, since they cannot provide a proper ellipsis antecedent. We test this with the fake antonym *namux* '(vertically) short', contrasted with the true antonym *katsar* '(horizontally) short'. Our prediction is borne out: strikingly, the fake antonym is unacceptable in such a construction (8), while the real antonym is acceptable (9). It is useful to consider these examples in a scenario where unsuccessful attempts are being made to rescue Dina from a deep pit with a rope.

(8)*Dina nemux-a   yoter me-ʃe-bor   amok.   (9) ha-xevel katsar yoter me-ʃe-ha-bor amok.
    Dina short-FSG more than-that-pit deep   the-rope more short than-that-the-pit deep
    Not: 'Dina is shorter than the pit is wide.'   'The rope is shorter than the pit is deep.'

Rullmann's ambiguity. Rullmann (1995) notices that the interaction of comparatives with modals gives rise to systematic ambiguities. *Lucinda is driving slower than is allowed* can either mean that she is driving slower than the minimal speed allowed, or slower than the maximal speed allowed. A prominent decomposition account of this ambiguity (due to Heim and Büring) assumes such sentences involve ellipsis, which may be resolved relative to two possible antecedents: [$_A$LITTLE $\sqrt{}$fast] or simply [$_A$ $\sqrt{}$fast]. This account, paired with our mixed analysis, predicts Rullmann sentences with fake antonyms to be unambiguous.

This prediction is borne out by (10)-(11). For (10), consider a scenario where Yael is going on a rollercoaster with a height restriction of 150-200cm; for (11), consider a scenario where a story is submitted to a competition restricting entries to 2-5 pages.

(10) *Yael nemux-a yoter me-ʃe-mutar.*   (11) *ha-sipur katsar yoter mi-ʃe-mutar.*
     Yael short-FSG more than-that-allowed   the-tale short more than-that-allowed
     'Yael is shorter than is allowed...   'The tale is shorter than is allowed...
     ✓... and therefore she cannot go on the ride.'   ✓... you must cut some text.'
     #... and therefore she can go on the ride.'   ✓... you can still add some text.'

Conclusion. Reduplication in Hebrew distinguishes two classes of adjectives: true antonyms (whose meanings are either intensified or attenuated after reduplication) and fake antonyms (whose meanings are only attenuated). Real antonyms are structurally distinguished by the absence/presence of a LITTLE morpheme, while fake antonyms are only lexically distinguished. We have shown that our mixed analysis makes the correct predictions with respect to cross-polar anomalies and Rullmann sentences if we accept an account of such constructions in terms of adjective decomposition. Our recipe, which marries data from reduplication (which is a form of diminution in Hebrew), cross-polar anomalies, and Rullmann sentences, provides a new tool for diagnosing antonym decomposition in other languages. We present preliminary data that this recipe applies successfully beyond Hebrew.

Büring (2007) More or Less, *CLS43*. **Heim** (2006) Little, *SALT16*. **Heim** (2008) Decomposing Antonyms?, *SuB12*. **Kennedy** (1997) Projecting the adjective, *UCSC*. **Kennedy** (2001) Polar Opposition and the Ontology of Degrees, *L&P24*. **Rullmann** (1995) Maximality in the Semantics of Wh-Constructions, *UMass Amherst*.