Negative predicates and Transformation values

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Positive and negative predicates
(Horn 1972 – Kennedy 2001)

1. Numerical degree phrases

(1) a. *Dan is two meters tall*
b.# *Dan is two meters short*

2. Comparatives

(2) a. *Dan is two meters taller than Sam*
b. *Dan is two meters shorter than Sam*

3. Cross-polar anomalies

(3) # *Dan is taller than Sam is short*

4. Exceptional positive predicates

(4) a.# *The box is thirty degrees warm*
b.# *The box is thirty degrees cold*

A corpus study

5. Ratio modifiers

(5) a. *Dan is twice as tall as Sam*

b.?? *Dan is twice as short as Sam*

Google

"twice as ADJECTIVE as" Search

Number of results with a **positive adjective** >> Number of results with its **negative antonym**

In ~80% (14/18) of the antonym pairs

My proposal

- Let $\mathbf{W_c}$ be the set of worlds consistent with the information in **an actual context c**

  (Stalnaker 1978).

- Gradable adjectives map entities $d \in D$ to degrees - real numbers $r \in \Re$.

1) The degree function of *tall* (per a unit like *centimeter* [cm]) is based on a conventional measuring system (a ruler).

$\Rightarrow$ It does not vary across worlds in W_c.

$$\forall w_1, w_2 \in W_c: \quad f_{tall,w1} = f_{tall,w2}$$

My proposal

2) The degree function of *short* is linearly reversed (LR) compared to f_{tall}. Examples of LR functions:

$\lambda d \in D.\ \mathbf{0} - f_{tall,w}(d)$

$\lambda d \in D.\ \mathbf{1} - f_{tall,w}(d)$

$\lambda d \in D.\ \mathbf{3.75} - f_{tall,w}(d)$

$\lambda d \in D.\ \mathbf{-4} - f_{tall,w}(d)$

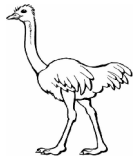
Dan's degree in *tall* is n cms bigger than Sam's iff
Dan's degree in *short* is n cms smaller than Sam's .

$\Rightarrow$ The degree function of *short varies* across worlds:

$\forall w \in W_c, \exists Tran_{short,w} \in \Re$:

$\forall d \in D,\ \mathbf{f_{short,w}(d) = Tran_{short,w} - f_{tall,w}(d)}$

Summary of my proposal

	$f_{tall,w}$ 		The transformation value	$f_{short,w}$ **($Tran_{short,w} - f_{tall,w}(d)$)**	
	 >		$Tran_{short,w}$	 <	
W_1	100 cm	50 cm	10	10-100 cm = -90 cm	10-40 cm = -40 cm
W_2	100 cm	50 cm	0	0-100 cm = -100 cm	0-40 cm = -50 cm
W_3	100 cm	50 cm	-10	-10-100 cm= -110 cm	-10-40 cm = -60 cm

a measuring convention **function-reversal**

Direct results of my proposal

1. Numerical degree phrases (*#Dan is 2 meters short*)

As $\text{Tran}_{\text{short}}$ is unknown in c, there is indeterminacy regarding the degrees *short* assigns.

$\mathbf{f_{short}}$() = **?? -90cm? -100cm? -110cm?** ☺

2. Comparatives (☺ *Dan is 2 meters taller / shorter*)

When **degree-differences** are computed, the transformation values of the degrees cancel one another. $\forall w \in \mathbf{W_c}$:

$\mathbf{f_{tall}}$( ,w) – $\mathbf{f_{tall}}$( ,w) =

100cm – 50cm = 50cm =

$\mathbf{f_{short}}$( ,w) – $\mathbf{f_{short}}$( ,w) =

(~~Tran~~$_{\text{short,w}}$ – 50cm) – (~~Tran~~$_{\text{short,w}}$ – 100cm) = 50cm ☺

Direct results of my proposal

3. Cross-polar anomalies (**Dan is taller than Sam is short*)

Only the degree assigned by *short* has a transformation value.

As a result, this value does not get canceled out.

So the statement can never be verified or falsified.

$\forall w \in W_c$: $f_{tall}($  $,w) - f_{short}($  $,w)$ =

$100cm - (Tran_{short,w} - 50cm)$ =

$150cm - Tran_{short,w}$ = ??

4. Exceptional positive predicates (*#30 degrees warm*)

The degrees of positive predicates are not reversed, but they may well be transformed.

This goes with unclear intuitions concerning the zero point.

Direct results of my proposal

5. *Ratio modifiers* (*#Dan is twice as short as Sam*)

 ‘s degree in *tall* is two times  ‘s degree in c

(**100 cm = 2 × 50 cm**)

But none of the two degrees *short* assigns to

 ($\text{Tran}_{\text{short,w}}$–100 cm) and  ($\text{Tran}_{\text{short,w}}$–50 cm)

is two times the other in c, e.g., in w_1:

(**-90 cm ≠ 2 × -40 cm**)

So *twice as short* is less acceptable than *twice as tall*.

THANK YOU!