Truthlikeness and belief merging language dependence

This discussion note pushes against the purported problem of language translation variance for certain approaches to truthlikeness by showing that translation variance also fundamentally affects the areas of belief revision and merging. Perhaps demonstrating the fundamental presence of translation variance in these areas gives weight to positions that defend translation variant accounts of truthlikeness by shifting the problem to one of finding the right language/framework or some such. For some background articles on matter, see:

- https://plato.stanford.edu/entries/truthlikeness/#FraDep
- http://fitelson.org/coherence/miller.pdf

1 Truthlikeness

Take Oddie's simple weather-framework that traffics in three atomic propositions - hot, rainy, and windy. Now define the following two new weather conditions:

minnesotan $=_{df}$ hot if and only if rainy

arizonan $=_{df}$ hot if and only if windy

We can describe the same sets of weather states in an *h-m-a*-ese based on these conditions:

If T is the truth about the weather then theory A, in *h-r-w*-ese, seems to make just one error concerning the original weather states, while B makes two and C makes three. However, if we express these two theories in *h-m-a*-ese however, then this is reversed: A

	h-r-w-ese	*h-m-a-ese*
T	$h \wedge r \wedge w$	$h \wedge m \wedge a$
A	$\neg h \wedge r \wedge w$	$\neg h \wedge \neg m \wedge \neg a$
B	$\neg h \wedge \neg r \wedge w$	$\neg h \wedge m \wedge \neg a$
C	$\neg h \wedge \neg r \wedge \neg w$	$\neg h \wedge m \wedge a$

appears to make three errors and B still makes two and C makes only one error. But that means the account makes truthlikeness, unlike truth, radically language-relative.

2 Belief Merging

Suppose there are three people, each who select their preferred state.

- Person 1 - $h \wedge r \wedge w$
- Person 2 - $\neg h \wedge r \wedge w$
- Person 3 - $\neg h \wedge \neg r \wedge w$

How can we combine these three preferences into one result? Well, in this case, the reasonable, straightforward approach is to select the majority for each atom. In this case the result is $result_1 = \neg h \wedge r \wedge w$. Pretty much all established belief merging frameworks would agree.

Now translate this scenario to *h-m-a*-ese:

- Person 1 - $h \wedge m \wedge a$
- Person 2 - $\neg h \wedge \neg m \wedge \neg a$
- Person 3 - $\neg h \wedge m \wedge \neg a$

The result of merging these is now $\neg h \wedge m \wedge \neg a$, which translated back to h-r-w-ese becomes $result_2 = \neg h \wedge \neg r \wedge w$.

In the end, $result_1 \neq result_2$.

3 Conclusion

The same type of issue can be found with AGM and other belief revision methods. Do these issues with variance and belief change add something to the truthlikeness and variance debate?

We are left with the following options to consider:

- Maintain that translation variance is a problem for both truthlikeness and belief revision/merging. The latter would involve adopting crude belief revision/merging techniques that ruin basic behaviours typical of core frameworks. For example, a distance based merging operator such that $\Delta(w_x, w_y) = 0$ iff $w_x = w_y$ and $\Delta(w_x, w_y) = 1$ iff $w_x \neq w_y$ would be translation invariant but not very sensitive. This leads to the point that unlike in the case of truthlikeness, where both variant and invariant approaches give competing but plausible measures, it seems like in the case of belief merging the price to pay for accommodating invariance is a hugely suboptimal measure.

- Reject accounts of truthlikeness that are translation variant but for some reason accept belief revision/merging frameworks that are translation variant. Is a justification of this inconsistency available?

- Accept the inevitability of translation variance and deal with it by offering arguments for the acceptability of variance or arguing for something like one true language.