

# Modifying Kremer's Modified Gupta Belnap Desideratum

XXX

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In the paper *How Truth Behaves When There's No Vicious Reference*, Kremer (2010) is concerned with the behavior of truth under certain circumstances which, intuitively, do not involve *vicious reference*. Roughly, vicious reference is that type of reference that forces truth—or the truth predicate—to behave in a non-standard manner. The reference involved in a Liar sentence certainly is vicious, while the reference involved in (1) certainly is not.

(1) consists of 6 words. (1)

Kremer argues that our judgement as to whether certain sentences involve vicious reference or not is influenced by our judgement concerning the *semantic value* of that sentence, which is a product of a *theory of truth*. That is, our intuitions concerning vicious reference are (partly) determined by our intuitions concerning which theory of truth is correct. According to Kremer, this influence of truth-theoretic intuitions on vicious reference intuitions is inevitable.

The most general formal articulation of non-vicious reference, we suggest, will be theory-relative. Kremer (2010) p. 357

Kremer provides a formal, theory-relative articulation of non-vicious reference and he uses this notion to spell out a formal, theory-relative desideratum for theories of truth. Intuitively, the desideratum, called the *Modified Gupta-Belnap Desideratum (MGBD)*, says that if there is no vicious reference according to a theory of truth  $\mathbf{T}$ , then, according to  $\mathbf{T}$ , truth should behave like a classical concept. Formally:

**MGBD** If  $\mathbf{T}$  dictates that there is no vicious reference in ground model  $M$  then  $\mathbf{T}$  dictates that truth behaves like a classical concept in ground model  $M$ .

With respect to the *rationale* of **MGBD**, Kremer cites Gupta (1982), who says that:

For models  $M$  belonging to a certain class—a class that we have not formally defined but which in intuitive terms contains models that permit only benign kinds of self-reference—the theory should entail that all Tarski biconditionals are assertible in the model  $M$ . Gupta (1982), p. 19

Thus, the proposed rationale for **MGBD** is that it is a theory-relative formalization of Gupta’s intuitively stated desideratum—note, Gupta speaks of an adequacy condition—for theories of truth. Here is an **A**lternative—to **MGBD**—translation of Gupta’s **D**esideratum.

**AD** If **T** dictates that there is no vicious reference in  $M$  then **T** dictates that all the  $T$ -sentences<sup>1</sup> are strongly assertible in  $M$ , where a sentence  $\sigma$  is strongly assertible just in case it is assertible and  $\neg\sigma$  is not.

Although any theory which violates **AD** violates **MGBD**, we will see that there are theories of truth which violate **MGBD** and satisfy **AD**. For the thirteen theories of truth considered by Kremer however, the behavior of truth as a classical concept *is* equivalent with the strong assertibility of all  $T$ -sentences. The reason of this is that all thirteen theories recognize a single semantic value which is allotted to all strongly assertible sentences. This semantic value is, per definition, the same value that is allotted to all *classical* strongly assertible sentences, such as ‘snow is white’.

As an example which testifies that **MGBD** and **AD** are not equivalent for all theories of truth, we will consider  $\mathbb{V}^{8^+}$ , a *Generalized Strong Kleene theory of truth* that was defined in XXX. The semantics of  $\mathbb{V}^{8^+}$  is described via a generalization of the Strong Kleene semantics for four valued theories of truth. The only distinction between the semantics of a four valued Strong Kleene theory and the semantics of  $\mathbb{V}^{8^+}$  is due to the fact that negation acts as “a swap operation” on three (rather than one) pairs of semantic values. Besides that distinction, the semantics is Strong Kleene, and can be described in terms of the lattice  $\mathbf{8}_{\leq}^+$ , whose Hasse diagram is depicted below. Conjunction and disjunction act as meet and join in the lattice  $\mathbf{8}_{\leq}^+$ , and universal and existential quantification act as generalized conjunction and disjunction. Negation acts as the identity operation on  $\mathbf{b}_e$  and  $\mathbf{n}_e$ , but also,

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<sup>1</sup>A  $T$ -sentence, or, in Gupta’s words, a Tarski biconditional, is a sentence of form  $T(\bar{\sigma}) \leftrightarrow \sigma$ , with  $\bar{\sigma}$  a closed term which denotes  $\sigma$

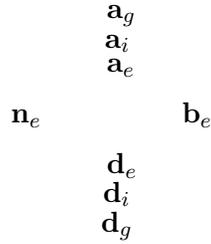


Figure 1: Hasse diagram of  $\mathbf{8}_\zeta^+$ , the lattice of  $\mathbb{V}^{\mathbf{8}^+}$ .

it interchanges  $\mathbf{a}_x$  for  $\mathbf{d}_x$ , where  $x \in \{g, i, e\}$  indicates the assertoric sense under consideration: *grounded*, *intrinsic* or *extrinsic*. According to  $\mathbb{V}^{\mathbf{8}^+}$ , a sentence is *strongly assertible* just in case its value is contained in  $\{\mathbf{a}_g, \mathbf{a}_i, \mathbf{a}_e\}$ , while a sentence is *classical* just in case its value is contained in  $\{\mathbf{a}_g, \mathbf{d}_g\}$ . Hence, according to  $\mathbb{V}^{\mathbf{8}^+}$  there non-classical strongly assertible sentences, which explains that  $\mathbb{V}^{\mathbf{8}^+}$  can satisfy **AD** while it violates **MGBD**. In the talk, I will:

1. Comment on the interpretation of  $\mathbb{V}^{\mathbf{8}^+}$ .
2. Explain why  $\mathbb{V}^{\mathbf{8}^+}$  satisfies **AD** while it violates **MGBD**.
3. Argue that **AD** is to be preferred over **MGBD** as a desideratum for theories of truth.

## References

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