Truthmakers for Epistemicism [1]

Shimpei Endo [2]

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This talk suggests truthmaker semantics for more epistemicists.

When philosophers talk about vagueness, they often talk about truth. In fact, many solutions towards the sorites paradox are about truth. [4] How about its source — what exists and makes a truth true — *truthmaker*?

The ultimate goal is to show truthmaker is useful for every vagueness theory. [5] The current objective is to suggest a truthmaker semantics for *epistemicism* based on *margin for error* [6] (1) blocking $\triangle\triangle$ principle and (2) adopting *higher-order vagueness* [7].

Sorensen is an epistemicist and a truthmaker theorist. Sorensen did talk about truthmaker when he talks about vagueness. [8] Williamson is another epistemicist but not adopting truthmaker. Williamson sees the problem of vagueness as a special case of a wider problem of epistemology: the failure of KK principle $K\phi \to KK\phi$. [9] The corresponding version is $\triangle\triangle$ principle: $\triangle\phi \to \triangle\triangle\phi$. [10] Its dual notion $\triangledown$ represents the *indefinite (vagueness)* operator. $\triangle\triangle$ principle is equivalent to $\triangledown\triangledown\phi \to \triangledown\phi$, which rejects higher-order vagueness. The goal of this paper is to suggest a truthmaker semantics based on his idea (margin for error) that blocks these principles.

	Sorensen	Williamson
Solution	We are ignorant	We are ignorant
Semantics and logic	Classical	Classical
Who to blame	The world	Us
Truthmaker	Gap	?
Want	Absolute borderline	Higher-order vagueness

Sorensen fails to capture higher-order vagueness because his *gap* has no space for that. If ϕ lacks its truthmaker, it is vague *simpliciter*. If ϕ does not lack, it is not vague *simpliciter*. [11]

Formally speaking first.... $M = \langle S, \sqsubseteq, || \rangle$ is a truthmaker model where: S is a non-empty set of *states* (truthmakers), $\sqsubseteq$ is a partial order on S and expressing its mereological (part-whole relation) structure, [12] and $||$ assigns verifiers $||^+$ and falsifers $||^-$ for each pair of predicate and constant. $\sqcup$ is defined as the least upper bound of $\sqsubseteq$. $s \Vdash B(x_n)$ (s makes $B(x_n)$ true) [13] iff $s \in |B(x_n)|^+$. $s \Vdash \neg B(x_n)$

[1] This handout : `overleaf.com/read/jvwzzqdbtnnr` The manuscript is shared upon request.

[2] PhD Candidate, Hitotsubashi University, Tokyo, Japan. Visiting St Andrews until September. `researchmap.jp/shimpei_endo?lang=en` ✉`endoshimpeiendo@gmail.com`

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[4] E.g. degree theorists take truth(value) as $(0,1) \subseteq \mathbb{R}$ instead of $\{0,1\}$.

[5] See my research proposal for further details of the entire project. `overleaf.com/read/hxbvpjjfjzgq`

[6] Williamson's key idea to connect vagueness and epistemology. "A margin for error principle is a principle of the form: 'A' is true in all cases similar to cases in which 'It is known that A' is true. Which margin for error principles obtain depends on the circumstances" (1994: 227)

[7] When you face indefinity between ϕ or $\neg\phi$, you are facing a first-order vague case $\triangledown\phi$. When you face indefinity between whether something is indefinite or definite, you are facing a second-order vague case $\triangledown\triangledown\phi$. Higher-order vagueness is its generalization.

[8] According to his *truthmaker gap epistemicsm*, borderline cases are true but unground i.e. have no truthmaker at all.

Roy Sorensen. *Vagueness and Contradiction*. Oxford University Press

[9] Read K as the knowledge operator. This principle says: if you know something, then you know that you know that.

T Williamson. *Vagueness*. Routledge

[10] Read $\triangle$ as the definite operator. This principle says: if defenitely ϕ, it is definite that definitely ϕ.

[11] See Jago's work for further details.

Mark Jago. The problem with truthmaker-gap epistemicism. 1(4):320–329

[12] $s \sqsubseteq s$ (reflexive), $s \sqsubseteq t$ and $t \sqsubseteq u$ implies $s \sqsubseteq u$ (transitive), and $s \sqsubseteq t$ and $t \sqsubseteq$ implies $s = t$ (anti-symmetry).

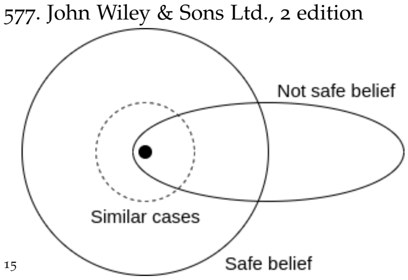
[13] We consider only in the form of $B(x_n)$ Read: "a person with n hairs is bald".

(s makes $\neg B(x_n)$ true) iff $s \in |B(x_n)|^-$. We are working on the *exact* setting — $s \Vdash \phi$ does *not* gurantee that $s^* \Vdash \phi$ for a "bigger" truthmaker s^* ($s \sqsubseteq s*$ and $s \neq s^*$). This "bigger" one is called an *inexact* truthmaker. [14]

[14] Fine and Jago are finalizing their book *An Introduction to Truthmaker Semantics*. For now:
Kit Fine. Truthmaker semantics. In Bob Hale, Crispin Wright, and Alexander Miller, editors, *A Companion to the Philosophy of Language*, pages 556–577. John Wiley & Sons Ltd., 2 edition

Margin for error in the analogy of target. Truth is a hit and knowledge is a "safe hit". [15] For an inexact knowledge of ϕ, we need to have *margin for error* in order to know ϕ: ϕ holds in any similar case. Williamson employs possible worlds.

> Believing is often compared to shooting at a target, the truth. The comparison is not quite apt, for the truth is a single point (the actual case), like a bullet, while the proposition believed covers an area (a set of possible cases), like a target. Instead, the believer's task may be conceived as drawing a boundary on a wall at which a machine is to fire a bullet. (...) (p.228) [16]

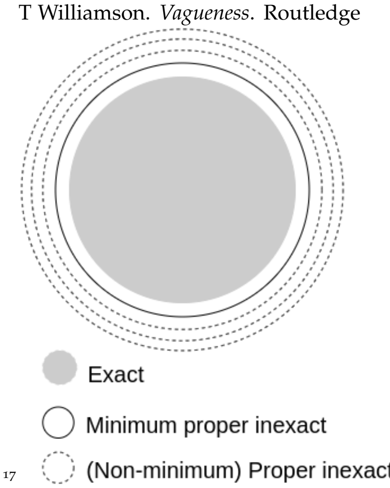


[15]

[16] Notice an analogy between similarity (indiscriminability) and distance.
T Williamson. *Vagueness*. Routledge

Margin for error in truthmaker? [17] An inexact truthmaker for ϕ contains some abundant information to determine ϕ. This redundancy mathes the idea of margin for error — a buffer that makes the belief "safe". We need a more detailed concept: *proper* and *minimum*. Consider an exact truthmaker s. Its *proper* inexact truthmaker s^p is a non-s truthmaker that contains s. [18] A *minimum* proper inexact truthmaker is a proper inexact truthmaker which has no other proper inexact truthmaker between s^m [19]

- $s \Vdash_e \triangle\phi$ iff s is a minimum proper inexact truthmaker for ϕ
- $s \dashv\!|_e \triangle\phi$ is an exact truthmaker for ϕ
- $s \Vdash_e \triangledown\phi$ iff s is an exact truthmaker for $\neg\phi$
- $s \dashv\!|_e \triangledown\phi$ iff s is an minimum proper inexact truthmaker for $\neg\phi$



[17]

[18] $s \sqsubseteq s^p$ and $s \neq s^p$.

[19] Note this is not *minimal* in the sense $s^m \sqsubseteq s^*$ for any proper ineact truthmaker s^*.

Blocking $\triangle\triangle$ principle. $\nVdash_e \triangle p \to \triangle\triangle p$.

Proof (sketch). A countermodel is: $S = \{\bullet, \circ\}$ with $\bullet \sqsubseteq \circ, \bullet \neq \circ$. Let $\bullet \in ||p||^+$. $\circ \Vdash_e \triangle p$ but $\circ \nVdash_e \triangle\triangle p$. [20]

[20] You may worry that semantics is too strong in the sense that $\Vdash_e \neg(\triangle\triangle p \wedge \triangle p)$. No worries. Just suppose another $*$ such that $\bullet \sqsubseteq \circ \sqsubseteq *$ and assign $\bullet, \circ \in ||p||^+$. $* \Vdash_e \triangle\triangle p \wedge \triangle p$.

Counting the order of vagueness. $\nVdash_e \triangledown\triangledown p \to \triangledown p$. You need this for higher-order vagueness.

Proof (sketch). Hint: recall that we are working on the *exact* framework.

Further cool things? If you dislike the very idea of higher-order vagueness, [21] you may adopt a different interpretation for $\triangle$ and $\triangledown$ or to put constraints over truthmaker stuructures to make $\Vdash_e \triangledown\triangledown p \to \triangledown p$ valid.

[21] Like Crispin Wright.

References

[1] Kit Fine. Truthmaker semantics. In Bob Hale, Crispin Wright, and Alexander Miller, editors, *A Companion to the Philosophy of Language*, pages 556 – 577. John Wiley & Sons Ltd., 2 edition.

[2] Mark Jago. The problem with truthmaker-gap epistemicism. 1(4):320–329.

[3] Roy Sorensen. *Vagueness and Contradiction*. Oxford University Press.

[4] T Williamson. *Vagueness*. Routledge.