On the Edge of the Abyss *

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Abstract

In this paper I provide a different justification for a margin for error principle for vagueness centred on the idea of sorites susceptibility. This justification can provide an alternative basis for an epistemicist theory of vagueness, and, alternatively, could be used to ground a form of agnosticism about vagueness alternative - and incompatible - to Wright (2003b). I argue that we should prefer the agnosticism over epistemicism, and, hence, that the correct theory of vagueness is agnostic reliabilism.
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Introduction

Thomas Acquinas held that since forms are immaterial and since the mode of immateriality is the mode of knowledge, it follows that the more a being is immaterial the higher is perfection of knowledge he has. Thus God “occupies the highest place in knowledge” because of His highest degree of immateriality, whereas humans, whose intellect is less separated from matter, know less perfectly (Summae, First Part, Question 14, Article 1, Objection 3).

Whether or not God exists, Acquinas’ insight that materiality goes with imperfection goes toward the account of knowledge based on margin of error principles. Any cognitive system implemented in a physical support has a limited capacity to detect small variations of the input data. A thermometer, for example, cannot detect variations of temperature under a certain threshold, say 0.1 degrees Celsius, and it is hence imprecise in registering the temperature to that degree of precision. Humans have analogous cognitive limitations. Sight, for example, cannot identify objects located over a certain distance. These limitations impact on the reliability of those judgements which are based upon these cognitive systems. Hence, for example, if I judge by looking that the hedge in front of me is 1.49 meters high, the precision of my judgement will depend on the precision of my sight together with other complicated factors (e.g. the interrelations between perception of distances and shapes and my knowledge of the metric system).

In general most - if not all - of our judgements seem to be affected by this sort of inexactness. This phenomenon can be analysed by neurosciences and cognitive science in order to explain what are the physical and functional basis of the limits of, for example, our perceptual system.
However, this is not the only dimension of study of the phenomenon. There is also the project of elucidating how these limitations affect the epistemological account of human knowledge - this project and its bearing on a proper understanding the phenomenon of vagueness will be the topic of this work.

In the phenomena highlighted above we have a correlation between the existence of a threshold in the capacity to detect a certain type of data and the inexactness of knowledge. Consider my beliefs, based on perception, on the height of a hedge I see in front of me. Let’s suppose that the hedge in front of me is actually 1.49 meters high and that the conditions under which I perceive it are optimal. I may certainly know that the hedge’s height is less than one kilometre and more than 1 centimetre: the content of the belief involved is such that the cognitive limitations of my sight do not impact in any way on the precision of these beliefs. But if I cannot tell the difference between a 1.49 meters high hedge and one which is 1.50 meters high, my true belief that the bush in front of me is 1.49 meters high is not reliable: it would have been false in a situation where the bush’s height is 1.50 meters though I would have not noticed the difference. The correlation between knowledge and inexactness can be expressed by the following Margin for Error Principle:

**Margin for Error Principle** I know by visual perception that the hedge in front of me is 1.49 meters high only if the hedge would have been 1.49 meters high in a perceptually similar situation.

Perceptual similarity seems to be the source of the inexactness of our knowledge of several types of situations such as judging the high of a tree by looking, distinguishing a sound from another by hearing, judging the number of persons in a crowd by casual looking etc... However, the source of inexactness might be also be conceptual. Timothy Williamson (Williamson (1994)) has indeed argued that knowledge of borderline propositions is impossible because of our knowledge of vague concepts is inexact: were we presented with a vague concept slightly different from the one we actually employ - say TALL* instead of TALL - we would be easily fail to detect the difference (more on this later).

Since inexactness of knowledge is a wide phenomenon it is useful to start with a general characterisation of it. In *Knowledge and Its Limits* Timothy Williamson has provided a sketch of a general derivation of margin for error principles from five premises (Williamson (2000) p.127-129). Williamson’s epistemic theory of vagueness presented in Williamson
(1994) make a case for margin for error principle for vagueness principles crucially adopting the principle of Semantic Plasticity according to which to slight variations in the overall use of a vague expression involve slight variations of its meaning. In the following I will provide an alternative justification of a margin for error principle for vagueness and I will argue that this justification can supply a basis for a form of agnostic theory of vagueness. In fact, to defend a margin for error principle for vagueness does not thereby commit to epistemicism untile bivalence is accepted. Since there are independent grounds to resist this acceptance based on the idea that we are not in position to know whether our verdicts in the borderline are knowlegeable, we should be resist to accept that bivalence holds and hence that vague expressions have sharp and unknowable boundaries. We should take an agnostic stance on the existence of sharp boundaries. Vagueness is manifestation of an epistemic indeterminacy.

Plan of the work

The plan of the work the following. In section 1 I offer a general characterisation of inexact knowledge providing a template for a justification of a margin for error principle. In section 2.1 I reconstruct Williamson’s justification of margin for error principles of vagueness which I criticise in section 2.2. In section 2.3 I advance a different justification of margin for error principles for vagueness based on the sorites-susceptibility of vague expressions. This motivation for margin error principle is suitable both for a psychological form of epistemicism and agnosticism about vagueness. In section 3 I make a case for agnosticism. Finally in section 4 I consider five objections to this project.

1 Inexact Knowledge: the General Framework

Following Williamson, I will show how to derive a general margin for error principle from i) a supervenience principle, ii) a safety principle of knowledge, iii) a principle on our discriminatory powers, iv) and some other minor principles (Williamson (2000) p.127-129). For a formal derivation

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1I use here the notion of meaning as a function from worlds to extensions.
from these principles to a generic margin for error principle for knowledge see appendix A.

To keep matters simple, I will exemplify the general framework for a derivation of a margin for error principle employing the condition that a certain hedge is 1.49 meters high. However nothing will hinge on this exemplification.

1.1 Terminology

Some preliminary definitions of the Williamsonian language employed further on are required. 
A condition is the referent a that clause. A case is a centred world (it can take in consideration a world, a time, a subject, a place and whatever other index is relevant for defining a certain circumstance). What is possible is restricted to nomically possible. If two cases are relevantly similar (where what is relevant is selected by the supervenient base we are considering), let’s say that they are close cases (Williamson (2000) p.124).

1.2 Supervenience

Let us introduce a function $v(x)$ mapping the holding of a certain condition C to a certain metric (this metric is the supervenience base, we may also assume that this only parameter on which C depends). For sake of concreteness let’s assume that the condition in question could be that a certain hedge is 1.49 meters high. The function $v(x)$ takes as values real numbers which express the height of the hedge. The variables $\alpha$ and $\beta$ range over cases. $C_\alpha$ is thus the condition that the hedge is 1.49 meters high in case $\alpha$, and $v(\alpha)$ and $v(\beta)$ are respectively the heights of the hedge in cases $\alpha$ and $\beta$. A trivial supervenience principle for the condition in question then holds (Williamson (2000) p. 127):

(\text{Supervenience})

$$\forall \alpha, \beta [v(\alpha) = v(\beta) \supset (C_\alpha \equiv C_\beta)]$$

The Supervenience principle is a trivial claim for a condition that the hedge is 1.49 meters high since the condition supervenes on a parameter that is explicitly mentioned in the clause that specifying the condition.

\[\text{The following is just a restatement of Williamson's definitions (Williamson (2000) p.52.}\]
1.3 Indiscriminability

The human belief-forming mechanism has a limited power of discrimination with respect to the detection of several types of conditions. For these class of conditions we are not perfect machines capable of discrimination at every degree of accuracy. 3 Once the relevant supervenient base varies under a certain threshold, there might be cases where the belief formation process cannot discriminate from the actual one. In such cases it might very well be that the mechanism deliver the same output from two slightly different inputs - i.e. if the belief has been formed in one case, the cognitive mechanism could deliver the same belief in a relevantly similar case. If you judge by casual observation that the hedge in front of you is 1.49 meters high, a variation of, say, 1 centimetre in the height of the hedge would have not been detected by your eyes - human sight has a limited power of visual discrimination - , thus in such a close case you could have believed the same. 4

These considerations are expressed by the following principle (Williamson (2000) p. 127):

\[ (\text{Indiscriminability}) \]
\[
\forall \alpha \forall n (|n - v(\alpha)| < c \land B_\alpha[C] \supset \exists \beta (\text{Close}(\beta, \alpha) \land v(\beta) = n \land B_\beta[C])
\]

where \( B_\alpha[C] \) means that in case \( \alpha \) it is believed that condition C holds. 5

1.4 Safety

One way to implement a reliabilist conception of knowledge is to hold that an agent knows that something is the case only if she could not easily have been wrong (Sainsbury (1997), Williamson (2000) pp.123-127). Such a reliabilist conception is committed to a principle according to which safety from error in similar circumstances is a necessary condition for knowledge. More specifically, according to Williamson a reliabilist conception

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3 Are there conditions for which we have no discriminatory limit? The natural thought is that a mathematical condition is such a case. However, it could be thought our limited computational capacity be such that acquaintance us with a mathematical object would not be sensitive to differences between objects that are computationally indiscriminable.

4 Knowledge should always be indexed to method when it comes to a particular indiscriminability principle. If you measure with a meter the height of an hedge the relevant threshold of discrimination is the accuracy of the meter and not of perceptual sensitivity of your eyes. For the sake of simplicity of I will ignore this indexing in the rest of the paper.

5 Belief should be relativized to a subject. For the sake of simplicity I will omit this index.
of knowledge involves modal claims about what I would have believed in close cases:

[...something...] happens reliably in a case α if and only if one avoids false beliefs in every case similar enough to α (Williamson (2000) p.124)

If false beliefs are avoided in similar cases, the belief is thus safe from error since it could not easily have been wrong:

[...] in a case α one is safe from error in believing that C iff there is no case close to α in which one falsely believes that C obtains (Williamson (2000) p.126)

If I know that the hedge is 1.49 meters high, my belief could not have easily been wrong; thus, in general, if I know that p, I thereby safely believe that p - i.e. in no case close to the actual one I would falsely believe that p.

The following principle establishes thus a connection between knowledge and safety from error (Williamson (2000) p.128):

Safety

∀α∀β(Close(β, α) ∧ K_α[C]) ⊃ ¬(¬C_β ∧ B_β[C])

where K_α[C] means that in case α it is known that C.  

If you know by looking that the hedge in front of you is 1.49 meters high, in no close situation you would falsely believe so. Since a close situation for the type of case in question is one where, keeping all facts fixed, the hedge differs just of one centimetre, Safety states that if you by looking know that the hedge is 1.49 meters high, you would not believe that is so in a case where it is, for example, 1.50 meters high.

The idea is thus that since your sight has a limited power of discrimination within a certain threshold, your true beliefs about something that involves an accuracy that falls below that threshold cannot count as knowledge; in fact, in a close case you would have very easily entertained the same belief - which would have been false - since you are not able to discriminate between the two cases. The method with which you have formed the belief - looking - that the hedge is 1.49 meters high cannot count as a good justification since it would have very easily provided, by way if the same evidence, a false belief.

6Notice that since knowledge is factive K_α[C] entails C_α.
1.5 Knowledge-Belief

The last principle that is needed for the derivation of the margin for error principle states that knowledge implies belief:

\[ \forall \alpha (K_\alpha [C] \supset B_\alpha [C]) \]

I will assume that this principle is almost uncontroversial.  

1.6 Margin for Error

Supervenience, Indiscriminability, Safety and Knowledge-Belief entail the following margin for error principle (see appendix A):  

\[ \text{MEP } \forall \alpha \forall \beta (|v(\alpha) - v(\beta)| < c \land K_\alpha [C] \supset C_\beta) \]

2 Vagueness and Inexact Knowledge

We have thus seen that a justification for margin for error principles can rely on Supervenience, Indiscriminability, Safety and Knowledge-Belief. A strategy to justify the claim that a margin for error principle is appropriate for a certain domain of discourse is thus to give a rationale for these latter principles. In the following discussion I will leave aside Knowledge-Belief since I assume that such a principle is a trivial conceptual truth. 

In the previous section I have provided a rationale for Supervenience, Indiscriminability, Safety in relation to knowledge of the height of garden hedge. In this section I will state what is the justification for these principles in relation to Williamson’s epistemicist theory. Instead of considering a precise condition, we will now turn our attention to the vague condition of looking 1.49 meters high.

\[ \text{See contra the arguments mentioned by S. Heterington in Hetherington (1996) chap.3.} \]

\[ \text{Margin for error principles are meant to constraint not only we actually know, in fact we sometime happen to lack knowledge of something just because, even if all the available evidence is, so to say, already available, we contingently lack the belief about it. In these cases it is said that even if we do not know, we are in a position to know. Williamson provides a stipulation for linking knowing to being in a position to know and states the margin for error principle in relation to being in a position to know (Williamson (2000) p. 128). Since this principle does not introduce a significant modification for the present purposes, I will leave it aside.} \]

\[ \text{See above footnote 7 for reference to opposite views on this.} \]

\[ \text{It is of course possible that we do not believe that it is raining because we are in a position to know that it rains. However being in a position to know p entails that we are in a position to believe p.} \]
Indiscriminability is the problematic claim to be defended by the epistemist who wants to use margin for error principles to explain why we are ignorant in the borderline area. I will thus start to examine this principle. In fact, once Indiscriminability has been properly spelled out and justified, the relevant notion of closeness will determine the proper supervenient base and this will allow to fix the content of Supervenience for the vagueness case. After having fixed Indiscriminability and Supervenience, an appeal to a reliabilist conception of knowledge - which consists in the acceptance of Safety - can put the epistemist in the position to justify the margin for error principle. The key move in such a dialectic is thus to find an appropriate notion of closeness in order to justify Indiscriminability for the condition in question since this notion will fix the content of the relevant instances of Safety and Supervenience.

Let’s now consider the condition that a hedge looks 1.49 meters high. Suppose that the hedge in front of you is a borderline case of “looking 1.49 meters high”. \(^{11}\) We might imagine a series of looks of the hedge departing from a case that clearly looks 1.49 meters high, and such that, and involving slight variations (such as deformations and blurrings) that lead to a case which clearly does not look 1.49 meters high. What counts as a close case for such a condition? The epistemist cannot say something on the line of the precise case since the uncertainty of your belief in the vague condition does not necessarily depends on the fact that the belief is formed on the basis of casual observation. In fact, if that was the reason of our ignorance of whether or not a certain hedge looks higher than 1.49 meters, the condition could be easily settled by switching to another method. However even if we measured the height of the hedge, nothing will be said for or against the belief that it looks as having this height. What is needed is a connection between looks and height of the hedge, but this connection is unknown to us. Assuming that a 1.49 meter high meters clearly looks us as having this height, there are certainly cases where things get fuzzy: what about one 1.489 meters high or one which is 1.4899? \(^{12}\) If ignorance in borderline cases were strictly analogous to the kind of ignorance that we have in the precise case, we could dispel our ignorance on whether the hedge in front of you looks 1.49 meters high.

\(^{11}\) Notice that the condition that the hedge is 1.49 meters high does not give raise to borderline cases since we know that, measuring its height, we can come to know that there is only one view which is right one to think.

\(^{12}\) If the reader is not satisfied with these heights, she can herself experience how by small variations she can run into borderline cases.
by using a more accurate method than looking at a the hedge - as we can dispel our ignorance that the hedge is 1.49 meters high by switching to a more accurate method such as measuring the hedge with a meter whose accuracy is, for example, of one millimetre. However, in the vague case we cannot actually conceive of any analogous method such that if we switched to it we would resolve our uncertainty. This does not mean that we know that it is impossible to gather such knowledge through some other method, but it just means that we have no clue on how to establish whether or not the hedge in front of you looks 1.49 meters high the basis of the method that presently available to us if the hedge is an uncertain case. Thus, since the reason for our ignorance of whether or not the vague condition holds is not connected to the unreliability of these methods, the epistemist cannot appeal to such methods to formulate the notion of closeness involved in Indiscriminability.

What is then the source of ignorance for borderline cases? In section 2.1 I will reconstruct Williamson’s proposal. In section 2.3 I will propose an alternative motivation for adopting margin for error principles for vagueness.

A final notice: let’s assume that the subjects for whom the principles stated below are understood to be valid are all competent in the use of vague vocabulary.

2.1 Inexact Knowledge and Semantic Plasticity

According to Williamson the source of inexactness connected to the belief of a vague condition is not perceptual but it is rather conceptual (Williamson (1994) p.230). We have inexact knowledge of the concept expressed by a vague predicate of a given language because were the overall pattern of use of that predicate slightly different, the property expressed would slightly change, although a speaker of that language would not be able to detect the difference in the pattern. In fact, such a speaker would have very easily formed the belief that the relevant condition holds in this close case where the belief’s content would have slightly changed because of a slight change of the overall pattern of use of the vague predicate.  

Accordingly, the relevant notion of closeness for the indiscriminability

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13 By property I simply mean the extensions associated in each world to that expression.
14 The most plausible view to accommodate this thought to hold a form of social externalism about content: slight variations in the dispositions of the speakers of your linguistic community would modify the content of your belief.
principle in the case of vagueness is similarity in the pattern of use of the vague expression of a given language. The relevant parameter used for the supervenience base is thus a numerical representation of the pattern of use of the expression. Williamson’s assumption is thus that a case where the overall pattern of use of ‘looks 1.49 meters high’ is slightly different from the actual one would very easily be indiscriminable to you; in other words, such a case is a close case for the condition that the hedge in front of you looks 1.49 meters high.

Is this exemplification of the indiscriminability principle plausible? In general, for a case to plausibly count as indiscriminable from another one we have to explain why the variation of the supervenient base under an established threshold is a variation that can be very easily undetected by a human agent. In the precise case this small variation is such that in a perceptually close case the garden hedge’s height would have differed by one centimetre or less; in the latter case the claim that such variation could be very easily undetected by you is perfectly plausible since it is a fact about human physiology that a garden hedge’s height could be different of less than one centimetre even though its appearance would be just like the appearance of the hedge in front of you. Indiscriminability for a vague condition says that there is a case for the condition that the hedge in front of you looks 1.49 meters high such that

.i the overall pattern of use of ‘looks 1.49 meters high’ is slightly different with respect to the actual one (the supervenient base of that case slightly differs from the one of the actual case);

.ii a human agent who actually utters ‘That hedge looks 1.49 meters high’ would have very easily made the same utterance in such a case.

Williamson’s idea is thus that the dispositional mechanism relevant for the use of ‘looks 1.49 meters high’ is not enough sensitive to identify a case where its pattern of use of would be slightly different.

\footnote{Williamson does not explain how the pattern of use could be represented by numbers, and I find hard to imagine how this could be done. However since he speculates that meaning may supervene in an unsurveyable way (Williamson (1994) p.209), this might explain why we could not even imagine such quantification.}

\footnote{I leave aside the fact that perceptual similarity is not sufficient for classifying a case as a close one since we do not want to classify sceptical scenarios such as brain-in-a-vat cases as close cases. Thus, as I said in the previous section, a close case for the condition that the hedge in front of you 1.49 meters high must therefore include other conditions such as that you are not dreaming etc...}
It might be objected that it is unjustified to assume without further argument that in such a close case a human agent would be insensitive to a slight variation of use since it is unclear that it is impossible for us to be so sensitive.\(^{17}\) Such a complaint amounts to assume the indiscriminability principle must hold necessarily. But even though the epistemicist would be surely in a stronger position if she was able to justify indiscriminability on the basis that it is necessarily true, it is important to notice that she is not forced to do so.\(^{18}\) In fact, in order to explain ignorance in borderline the epistemicist needs a margin for error principle, and such a principle is available when the appropriate instances of the principles of indiscriminability, supervenience, safety and knowledge-Belief are provided. For her explanatory purposes, the epistemicist would be forced to account for the necessity of latter principles only if it was assumed that the ignorance she has to explain must be necessary ignorance, but I do not see why she should so. We have no clue of whether or not we are necessarily incapable to have knowledge in the borderline, the epistemicist’s minimal claim is that we know is that we presently lack knowledge and that we presently cannot imagine how to gather such knowledge. Thus epistemicists do not need to assume the strong view that ignorance in borderline area is absolutely impossible.\(^{19}\)

2.1.1 Pattern of Use Indiscriminability

After these considerations, we can state what Williamson takes the indiscriminability principle to be for a vague condition expressed by sentence \(\forall "V"\) of a certain language:\(^{20}\)

\[
\forall n \forall \alpha (|n - p(\alpha)| < c \land \ U_\alpha[\forall "V"]) \supset \exists \beta (\text{Close}(\alpha, \beta) \land (p(\beta) = n) \land \ U_\beta[\forall "V"])
\]

where \(p(x)\) is a function mapping a case to the numerical representations of the pattern of use of a linguistic community along a given metric\(^{22}\), \(c\) is threshold under which we are insensitive to a change of pattern of use and \(\forall "U_\alpha["V"]\) says that it is uttered the sentence \(\forall "V"\) (that actually expresses the vague condition that \(V\)) in case \(\alpha\).

\(^{17}\)A similar worry has been put forward by Greg Ray (Ray (2004) pp.187-191).

\(^{18}\)I owe the following considerations to Richard Dietz.

\(^{19}\)Roy Sorensen exemplifies an epistemicist position which takes this strong pessimist position (Sorensen (2001)).

\(^{20}\)For the sake of simplicity reference to a language will be dropped in the following.

\(^{22}\)Strictly speaking a pattern of use is relativized to the vague expression embedded in the sentence and to a linguistic community. For sake of simplicity I will ignore these indexings.
2.1.2 Meaning-Use Supervenience

After having stated the relevant indiscriminability principle, we can turn our attention to the supervenience principle.

In §1.2 I said that the supervenience principle is a trivial claim the condition that the hedge is 1.49 meters high. The principle of supervenience is much more problematic when we consider a vague condition.

We have previously noticed that finding the relevant supervenient base for this condition it is not trivial if we have to explain the ignorance on the borderline area by means of the notion of inexact knowledge. However, after having spelled out the notion of indiscriminability that is needed by the epistemicist for justifying the relevant principle of indiscriminability in the case of vagueness - i.e. Pattern of Use Indiscriminability - , we have also found out what must be selected as the supervenience base: the overall pattern of use of the relevant vague predicate. Thus, the relevant supervenience principle states that if the pattern of use of 'looks 1.49 meters high' is the same in two cases then the vague condition must hold in both cases.

The supervenience for the vague condition in question amounts thus to claim that the contribution to the truth-conditions of 'looks 1.49 meters high' to the sentence 'the garden hedge in front of you looks 1.49 meters high' supervenes on use. A shift in the semantic value that predicate entails a shift in its pattern of use (Williamson (1994) p.206):

\[(\text{Meaning-Use Supervenience}) \]

\[\forall\alpha\forall\beta[p(\alpha) = p(\beta) \supset (T(\neg V))^\alpha \equiv T(\neg V))^\beta]\]

where \(T(\neg V)^\alpha\) means that the sentence \(\neg V\) is true in case \(\alpha\).

2.1.3 Pattern of Use Safety

Once the notion of indiscriminability is fixed and the supervenience base is accordingly fixed, the content of the safety can be accordingly fixed:

\[(\text{Pattern of Use Safety}) \]

\[\forall\alpha\forall\beta(\text{Close}(\beta, \alpha) \land K_\alpha[T^\neg V]) \supset (\neg T^\neg V)^\beta \land U_\beta[T^\neg V])\]

Thus if you know that the garden hedge in front of you looks 1.49 meters high entails that there is no a case where the overall pattern of use of '1.49 meters high' would be slightly different and where I would falsely utter such sentence. Notice that this safety principle crucially relies on a meta-linguistic statement, in fact in the close case the pattern of use of is different the meaning-use supervenience principle entails that
the sentence "\[ V \]" has different truth-conditions and hence expresses a different proposition. An agent can satisfy this condition in the actual case if she would not utter "\[ V \]" in the close case - either uttering the contrary or just being silent.  

2.1.4 Semantic Plasticity

Pattern of Use Indiscriminability entails that there is at least one close case where you would utter ‘That garden hedge looks 1.49 meters high’, thus the only way to satisfy reliability is that ‘That garden hedge looks 1.49 meters high’ be not false in such a close case - that is classically equivalent to say that the sentence be true. Since Pattern of Use Indiscriminability states that such a case is a case where the overall pattern of use of ‘looks higher than 1.49 meters high’ is slightly different from the actual one, the question is whether such a case is a case where ‘That garden hedge looks 1.49 meters high’ can be false. Could there be such a case? According to Williamson such a possibility is genuine, in fact he holds that a slight change in the overall pattern of a vague expression always changes its meaning (Williamson (1994) p.231). 24 Following John Hawthorne, let’s call Semantic Plasticity the property of vague expressions according to which a slight change in the pattern of use involves a slight change in its meaning: 25

\[
\forall \alpha, \beta ([|p(\alpha) - p(\beta)| = k) \land k < c) \supset Says(\langle V \rangle_{\alpha}) = Says(\langle \langle p(\alpha), \beta \rangle \rangle_{\beta})
\]

23It could be thought that another way to trivially satisfy Safety is that you lack a belief in the actual case. Thus if you simply suspended your judgement in the borderline area, you would be a reliable agent and, consequently, the epistemicist would be in trouble in explaining your peculiar ignorance about the condition. However, such a thought is misguided since the relevant notion is not knowing but being in a position to know. Thus the former objection should be rephrased as saying that if you are not a position to believe in the borderline area the garden hedge in front of you looks 1.49 meters high, your would count as a reliable agent. However it is a highly controversial claim to say that you, or any human agent in general, who is a competent speaker of the language in question is not in a position to believe that such a condition holds, for what could prevent you from forming such a belief if not that you refrain from doing it?

24It is unclear whether Williamson holds such dependence for the natural kind terms since the meaning of these terms crucially depends on natural divisions towards to which our use could be insensitive. A possible position could be to hold that in such cases fluctuations in the use would determine only tiny variations in the meaning (Williamson, private conversation).

where $\text{Says}(X)_{\eta}$ is the relation of saying of a sentence in a certain case, $\text{Says}(\neg V)_{\alpha} = \eta$ a function from the pattern to use of $\neg V$ in $\alpha$ - $p(\alpha)$ - to the sentence that in $\beta$ has the same meaning of $\neg V$ in $\alpha$. Intuitively, this function is meant to represent the connection between variations of use and variations of meaning.

Notice that Semantic Plasticity does not amount to the more general claim that use supervenes on meaning. To get this result we must claim also that in cases where the difference in the pattern of use is more than slight there is change in meaning. However since this latter claim is much more plausible than Semantic Plasticity, if the epistemicist is committed to Semantic Plasticity it is very plausible to infer that is committed to the following extension of Semantic Plasticity:

(Semantic Flexibility)

$$\forall \alpha, \beta([|p(\alpha) - p(\beta)| = k \land k \geq c) \supset (\text{Says}(\neg V)_{\alpha} = \text{Says}(\neg V)_{\beta})]$$

Semantic Plasticity and Semantic flexibility which entail the supervenience of use on meaning, for every difference in use there is a difference in meaning:

(Use-Meaning Supervenience)

$$\forall \alpha, \beta(\text{Says}(\neg V)_{\alpha} = \text{Says}(\neg V)_{\beta}) \supset (p(\alpha) = p(\beta))$$

Thus, if ‘looks 1.49 meters high’ is semantically plastic, then it would slightly change its meaning whenever the overall pattern of use slightly changes. Since meaning supervenes on extension, a different meaning of ‘looks 1.49 meters high’ would involve a change in its extension in a close case. If such a change of extension makes your utterance false in the close case, then Pattern of Use Safety is not fulfilled and thus you lack knowledge of the fact that the garden hedge in front of you looks 1.49 meters high even if you believe something that is actually true.

With Semantic Plasticity in play, we can derive from a margin for error principle for a vague condition - let’s call it $\text{MEP} - \text{Vag}$ - the margin for error principle that Williamson uses to explain why an agent cannot know the boundaries of a vague predicate - let’s call this latter principle $\text{MEP} - \text{Ign}$.

---

26 Strictly we should consider utterances of sentences. Nothing hinges on this simplification.

27 Strictly speaking, the agent would lack the meta-linguistic knowledge that ‘That garden hedge looks 1.49 meters high’ is true. It must be assumed that knowledge of the proposition expressed by the utterance of this sentence entails also the meta-linguistic knowledge that the sentence uttered is true.
∀α, β(∥p(α) − p(β)∥ < c ∧ Kα[T⌜V ▷⌜]] ⊃ T⌜V ▷⌜β])

(MEP-Ign)
∀α ∨ β(Kα[T⌜V ▷⌜]]) ⊃ T⌜((f(p(β), α))⌜α)

To clarify better the form that such principles have let’s go back to the example of the vague condition that garden hedge in front of you looks 1.49 meters high. The relevant instances of the latter two principles are then (⌜L(x)⌝ means that the hedge looks x meters high):

(MEP-Vag-Look)
∀α, β(∥p(α) − p(β)∥ < c ∧ Kα[T⌜L(1.49) ▷⌜]] ⊃ T⌜L(1.49) ▷⌜β])

MEP-Vag-Bald says that if you know that garden hedge in front of you looks 1.49 meters high, then the sentence ‘That garden hedge looks 1.49 meters high’ uttered by you must be true in a case exactly alike except that pattern of use of ‘looks 1.49 high’ is slightly different.

(MEP-Ign-Look)
∀α, β(Kα[T⌜L(1.49) ▷⌜]]) ⊃ T⌜L(f(p(α), β))⌜β])

MEP-Ign-Look says that if you actually know that know that garden hedge in front of you looks 1.49 meters high, then a sentence expressing slight different condition must be true in the same case. In fact, the value of the function f(p(α), β) a sentence type having an actual pattern of use with truth-conditions very similar to the ones of L(1.49) in β. Since we are considering a small change, we can represent such a slight difference by stipulating that the value of the function is the sentence type L(1.50) in α. MEP-Ign-Look can accordingly be rephrased as:

(MEP-Ign-Look*)
∀α, β(Kα[T⌜P(1.49) ▷⌜]]) ⊃ T⌜P(1.50) ▷⌜β])

Semantic Plasticity allows to derive MEP-Ign from MEP-Vag (see appendix B).

Let’s recap the situation. Pattern of Use Indiscriminability, Pattern of Use Supervenience and Pattern of Use Safety are sufficient to derive MEP-Vag. Semantic Plasticity gives the basis for deriving MEP-Ign which allows the epistemicist to explain why the sharp boundaries of a vague predicate are unknown.

\textsuperscript{28} Since these principle are formally equivalent to Indiscriminability, Supervenience and Safety the proof of such derivation is formally equivalent to the proof given in Appendix B.
2.2 Against Semantic Plasticity

Semantic Plasticity is a very controversial thesis. The idea that the dispositions of the users of are so strictly connected to the truth-conditions of the utterances in the borderline area that slight changes in the use of a vague predicates determines slight fluctuations the utterances’ truth-conditions, is highly implausible. How can the reference fixing mechanism be so finely tuned to the chaotic array of dispositions of a community of speakers of a language? How can the slight variation of these dispositions rearrange all semantic relations and determine a slight shift in the extension of the relevant expression? Much of the intuitive implausibility of epistemicism is rooted against such idea of an almost magical fixing reference mechanism.

[Hawthorne’s objections]

The idea of such a strict dependence between the speakers’ disposition to use a vague predicate and the truth-conditions of the utterances in the borderline area is mysterious as it is mysterious the epistemicist’s doctrine that the linguistic practices of the speakers determines the truth-value of the utterances in the borderline area. However these are distinct thoughts. It could held that there is a reference-fixing mechanism also for vague expressions without thereby being committed to semantic plasticity. In fact, in the following I will provide an alternative justification for margin for error principle without recurring to semantic plasticity.

2.3 Inexact Knowledge and Sorites Susceptibility

Suppose you believe on the basis of looking that the hedge in front of you is 1.49 meters high. If you cannot perceptually discriminate the height of two hedges which differs of 1 centimetre, what you say is not based on a knowledgeable belief. Your knowledge by visual perception that the hedge in front of you is 1.49 meters high is constrained by your capacity discriminate between the hedge you actually see and other similar cases in which the hedge is slightly different in height - i.e. by 1 centimetres. As we saw above, if the latter condition is not met, your belief is not reliable and thus not knowledgeable.

Imagine now a gentleman asking you to say whether the hedge looks

\[29\] Does the converse direction hold: does semantic plasticity entail the existence of a reference fixing mechanism? I conjecture that it does. [TO DEVELOP].
higher than 1.49 meters. Call the predicate \( \neg x \) looks higher than 1.49 meters \( \neg LH(x) \) for short. Let case \( s_k \) be the set of relevant circumstances in which you fix your attention as to whether or not \( LH(x) \) applies in relation of a certain value of height of the hedge - call this height \( h \). Imagine that from \( s_k \) different chains of cases depart, each member of these chains is linked to another one by slight variations of the height of the hedge. Each of these chains represents a possible outcome in your epistemic situation of when you are engaged in a sorites reasoning for \( LH(x) \). Each case represents thus a step of a certain sorites reasoning.

If knowledge of this type of condition - i.e of a vague condition - is analogous to the knowledge of the height of hedge, your belief that the hedge in front of you looks higher than 1.49 meters must be constrained by similar principles. Whereas in the case of knowledge of the height of the hedge what is relevant is the indiscriminability of the look of heights of two hedges, in the case of knowledge of the appearance of height we to have turn our attention to the sorites susceptibility of vague predicates to find the proper notion of indiscriminability.

2.3.1 Sorites Supervenience

Let \( v(x) \) be the function that maps every case to a value of the relevant metric. For the condition of looking 1.49 meters high, \( v(x) \) will thus map each case to a certain height. Each case is thus related to a certain parametric value which represents the height considered by you in assessing the application of \( LH(x) \). Thus, since in case \( s_k \) you considered whether \( LH(v(s_k)) \) applies to a height \( h \) meters, \( v(s_k) = h \).

The set of these parametric values represents the supervenient base of \( LH(x) \). There is no difference in the condition of two hedges looking 1.49 meters high without a difference in their height:

**Sorites Supervenience (SSup)** \( \forall \alpha, \beta \) \( v(\alpha) = v(\beta) \supset (LH(v(\alpha))_\alpha \equiv LH(v(\beta))_\beta) \)

where \( \alpha \) and \( \beta \) range over cases, \( v(x) \) is the function mapping cases to heights, \( LH(v(\alpha))_\alpha \) means that in case \( \alpha \) an object with the height associated to that case looks 1.49 meters high.

2.3.2 Sorites Indiscriminability

Pressed by the gentlemen’s insistence to give a verdict on the look of the height of the hedge in front of you, suppose you come to believe that
the hedge in front of you looks 1.49 meters high. Call such a case \( s_0 \).

There are certainly different chains of possible cases linked to \( s_0 \) which collectively represent different possible configurations of your epistemic situation about the appearance of height of an hedge. These configurations represent different possible outcomes of being involved in a sorites reasoning; they are, so to say, different ways to fill your belief box with beliefs about the appearance of heights after being engaged in a sorites reasoning for \( LH(x) \).

For each case where you believe that the related parametric value satisfies the application of \( LH(x) \), there is a close case in which you believe that the predicate applied too. Vague conditions are sometime indiscriminable to slight variations of the parametric value. The character of vague predicates is such it is always easily possible, in the middle of a sorites reasoning, that we succumb to the seducing thought that one centimetre does not make a sufficient for changing your mind about the application of \( LH(x) \).

The crucial difference between such indiscriminability and the one involved in the judgement about the precise height of the hedge is that, whereas the former is essentially due to the imperfection of a method used to form the belief -i.e. looking-, the one involved for vague conditions holds irrespectively to the method used. If you believe by looking that that hedge in front of you looks 1.49 meters high and if it is vague whether this condition holds (i.e. you are presented with a borderline case of \( LH(x) \)), no further information such as the exact height of the hedge, would eradicate the possibility that we fail to believe the opposite. On the contrary, if in the precise case the ground of the belief is a certain visual appearance, switching to a differ method such as measuring can cancel the close possibility of a case in which I do not change my belief as regards to a hedge which is 1 centimetre higher. In the case of vagueness, the source of the indiscriminability is conceptual and thus ineradicable unless we choose to change the concept. The former considerations are expressed by the following principle:

**Sorites Indiscriminability (SI)**

\[
\forall \alpha \forall n (|n - v(\alpha)| \leq 1cm \land B_\alpha[LH(v(\alpha))] \supset \exists \beta (Close(\beta, \alpha) \land v(\beta) = n \land B_\beta[LH(v(\beta))])
\]

where \( BH_{\alpha}[LH(v(\alpha))] \) means that it is believed in case \( \alpha \) that the height associated to that case makes a hedge looking higher than 1.49 meters.

(SI) says that whenever you form the belief that an object - i.e. an
hedge - looks 1.49 meters high, there is a close case constituted by a step of a sorites reasoning such that the height considered differs at most of one centimetre where the you still believe that the hedge whose height differs at most of one centimetre looks 1.49 meters high.  

2.3.3 Sorites Safety

Is your belief that the hedge in front of you looks 1.49 meters high reliable? To be so, your belief-forming mechanism must be such that you would not be disposed to deliver wrong beliefs about the appearance of height in cases close to the actual one. If the mechanism is insensitive to detect the relevant differences between the actual case and a close case so that, were the mechanism triggered, it would produce the belief that the hedge in front of you looks 1.49 meters high even though the hedge would fail to have be so, the belief would count as unreliable.

Knowledge of a vague condition is constrained by a safety principle:

**Sorites Safety (SSafe)** $\forall \alpha, \beta (\text{Close}(\beta, \alpha) \land K_\alpha[\text{LH}(v(\alpha))]) \supset \neg \neg \text{LH}(v(\beta))$  

where $^\forall K_\alpha[\text{LH}(v(\alpha))]$ means that in case $\alpha$ it is known that that a hedge whose height is $v(\alpha)$ looks higher than 1.49 meters.

Sorites Safety says that whenever your verdict on the look of the height is knowledgeable, there is no close case where the relevant condition fails and where the you believe that the condition holds. If you know something, you could not easily have been wrong.

2.3.4 Sorites Margin for Error Principle

Principles (SSup), (SI) and (SSafe) suffice to derive the following margin for error principle:

**Sorites Margin for Error Principle (S-MEP)** $\forall \alpha, \beta ([|v(\alpha) - v(\beta)| < 2 \land K_\alpha[\text{LH}(v(\alpha))]) \supset \neg \neg \text{LH}(v(\beta))$  

The basic idea of the entailment is given by the following considerations. Suppose that in a certain case $s_1$ you know that the hedge in front of you whose height is $h$ - thus $v(s_1) = h$ - looks 1.49 meters high. Consider any case $s_2$ such that the associated height is such that the difference between it and $v(s_1)$ is less than one centimetres. By (SI) there is a case of

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30 Notice that even though (SI) expresses an intuition that lies behind the tolerance principle, it is not paradoxical.
the latter type, call it $s_3$ where we believe that $LH(v(s_3))$. By (SSafe) it is not the case that the height $v(s_3)$ fails to satisfy $\vdash LH(x)$ even though you believe so in $s_3$. Suppose for reductio that $v(s_3)$ fails to satisfy $\vdash LH(x)$ in $s_3$. It thus follows that you do not believe $LH(v(s_3))$ in $s_3$. Contradiction. Thus, by reductio, in $s_3$ $v(s_3)$ does not fail to satisfy $\vdash LH(x)$. By (SI) $v(s_3)$ can be any value such that the $v(s_3) - v(s_1) \leq 1cm$. Let thus $v(s_3) = v(s_2)$. By (SSup), in $s_2$ $v(s_2)$ does not fail to satisfy $\vdash LH(x)$. Since $s_2$ and $s_1$ are generic case, S-MEP can hold universally. \footnote{The derivation of S-MEP is structurally similar to the one sketched by Williamson (Williamson (2000) p.128) and to the one formally reconstructed in appendix A.}

The intuitive idea of the derivation is that whenever you entertain a belief about the application of $\vdash LH(x)$ to a certain height, you are potentially prone to believe so for a slight variation in the height. More generally, since any vague condition can give rise to a sorites reasoning, any judgement on a vague condition is coupled by a proneness to believe that the vague predicate applies in a case similar where it is considered a slightly different value the relevant parameter. Thus if your belief of such condition would have not have been easily wrong, the belief in the latter case must not be false in a close case -i.e. the relevant condition believed in the close case must not fail. Thus, if reliability has to be a necessary condition for knowledge, beliefs of vague conditions are constrained by a margin for error principle.

(S-MEP) entails that the cut-off is unknown (see appendix C).

The moral of this result is that knowledge of a vague condition is conceptually inexact. However, this inexactness does not come from the fact that we are unable to discriminate slight variations in the pattern of use of vague expressions as Williamson has argued. Rather, the source of such inexactness is due the fact that vague expressions are sorites susceptible.

Whenever we believe that a vague condition holds, we are induced to fall prey of certain reasoning in which we are keen not to change our belief for slight variations of the relevant parameter. And though we can in fact resist to this temptation and choose to block the sorites either upholding the belief of changing our mind, at each step of the sorites it is always an open possibility for us to not change our mind irrespectively of the possibility that the belief may turn out to be false.

Vague expressions are such we are always on the edge of an abyss: whenever we use them we can always be engaged in a sorites and tempted to fall prey of the paradox. It is this central feature of vague expres-
sions that justifies the ineradicable inexactness of knowledge of a vague condition.

3 The Case for Agnosticism

An moderate epistemicist - one who does not hold that borderline cases are cases of absolute ignorance - could be perfectly content with the story offered above. The psychological version of the margin for error principle - S-MEP - could be used to ground a version epistemicism analogous to Williamson’s epistemicism if coupled with the claim that bivalence holds. Such a brand of epistemicism does not have to be committed to the claim that borderline are absolutely unknowable (as Sorensen (2001) holds), neither it has to be committed to the claim that knowledge of the cut-off is not feasibly possible if the latter claim is relativized to all methods and if what count as method includes the psychological setting of human being: we could develop machines which could discover things we are unable to discover.

3.1 Rejecting Verdict Exclusion

Since the starting claim of the epistemicist is that our verdicts in the borderline area are not knowledgeable - call this principle Verdict Exclusion \(^{32}\) - it is natural - at least for the moderate epistemicist - to use margin for error principle to account for this putative ignorance. However Verdict Exclusion is in tension with a crucial intuition related to vagueness. \(^{33}\) Consider a sorites series for “Looks 1.49 meters high”. \(^{34}\) In clear cases this is clearly the case: since a polar verdict is mandated, it is a fortiori permissible to take that view. But I want also to submit the intuition that in borderline cases competence in the use of vague predicates does not mandate silence or suppression of any inclination to offer a polar verdict: we are entitled, if moved, to take any of the two possible polar views - i.e. we are permitted either to think that “Looks 1.49 meters high” truly applies to the case or to think that “Looks 1.49 meters high” falsely applies to the case - provided we do this with an appropriate tolerance to-

\(^{32}\)See Wright (2003b).

\(^{33}\)(The following is a reconstruction of an argument presented in Wright (forthcoming).

\(^{34}\)By “competence” I mean both linguistic and conceptual competence.
Towards the opposite view. Call this intuition the *Entitlement Intuition*. Thinking that Verdict Exclusion is known to hold in the borderline area undermines any presumption of knowableability in the borderline area, and since this presumption is a condition for having a rational opinion - for judging that p rationally involves that one ought to think that p - Verdict Exclusion mandates that one ought not to think p in the borderline area, and hence that he would be mistaken if he did so. But the latter conclusion is inconsistent with the entitlement intuition, hence either we give up the intuition or we do not accept Verdict Exclusion. Since it is methodologically better to respect an intuition unless its acceptance involves high theoretical costs - such as embracing a contradiction - it is preferable to refrain from accepting Verdict Exclusion for vague discourse.

Notice that: first, the argument does not prove that Verdict Exclusion is inconsistent with the Entitlement Intuition, but rather that the latter is inconsistent with *knowledge* of Verdict Exclusion. The Entitlement intuition is thus consistent with the *possibility* that Verdict Exclusion holds. Second, there is a significant difference between the Entitlement Intuition and Faultless Disagreement. In fact, claiming that the latter holds amounts to saying that both conflicting opinion are right, whereas commitment to the former is only commitment to say that any of the conflicting view does not offend competence in the use of the relevant vague expressions - lack of incompetence does not entail faultlessness.

Rejecting Verdict Exclusion is thus motivated by the idea that it is open what to think in borderline cases and whether, in thinking one particular way, one is knowledgeable in doing so. However we must be careful in characterizing this openness, for if I think that p, I am committed to think and anyone taking the opposite view ought not to do so - so there is a sense of “open” - i.e. not committed to think that one does not know - in which we cannot say that it is open that one particular verdict on a borderline proposition is knowledgeable: whenever we assume so we are committed to think that any of the two opposite verdicts is not knowledgeable. The sense of openness is thereby something different from lack of commitments for what one ought to think. Crispin Wright has proposed the following characterisation: “no-one is in a position to claim to know that ny polar verdict about a borderline case is, just in virtue

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35 The contextualist might try to do justice to this intuition by exploiting the - putative - contextual-dependence of “Looks 1.49 meters high”. However, I not only mean to refer to the use of the predicate, but also to the - unique - property expressed by that predicate.

36 The problem has been raised in Rosenkranz (2005) and Rosenkranz (2005).
of its subject matter and specific polarity, not knowledgeable" (Wright forthcoming)). Though if I judge that p I committed to think that any opposite view is wrong and hence committed to think that anyone taking the view that not-p does not know not-p, I do not regard myself in position to claim to know p, hence knowing not-p is an epistemic possibility that I leave open because I refrain from claiming to know p. The source of vagueness comes from second-order ignorance: though verdicts are permitted in the borderline area, we lack rational basis for claiming which verdict is knowledgeable.

3.2 Rejecting the Unpalatable Existential

Let’s take a stock. We have argued for the claim that margin for error principle holds for knowledge of a vague condition and that we should refrain from accepting Verdict Exclusion. What should we think about the epistemicist’s claim that the vague we have to:

From these premises a deduction for the non-acceptance of the existence of the cut-off is available - (“t” is a rational thinker competent on the use of vague vocabulary):

**The Revisionary Deduction**

1. t does not accept Verdict Exclusion (Ass)
2. t accepts that (∃x)(LH(x) ∧ ¬LH(x')) (Ass.)
3. (4) t accepts that (∀x)(K[LH(x)] ⊃ LH(x')) (Premise)
4. (5) (∃x)(LH(x) ∧ ¬LH(x')) (Ass.)
5. (6) (LH(a) ∧ ¬LH(a')) (Ass.)
6. (7) (¬LH(a')) (∧-elim:6)
7. (8) (∃x)(¬LH(x) ∧ ¬LH(x')) (Ass.)
8. (9) (∃x)(¬LH(x) ∧ ¬LH(x')) (Ass.)
9. (10) (∃x)(¬LH(x) ∧ ¬LH(x')) (Ass.)
10. (11) (∃x)(¬LH(x) ∧ ¬LH(x')) (Ass.)
11. (12) (∃x)(¬LH(x) ∧ ¬LH(x')) (Ass.)
12. (13) (∃x)(¬LH(x) ∧ ¬LH(x')) (Ass.)
13. (14) (∃x)(¬LH(x) ∧ ¬LH(x')) (Ass.)
14. (15) (∃x)(¬LH(x) ∧ ¬LH(x')) (Ass.)
15. (16) (∃x)(¬LH(x) ∧ ¬LH(x')) (Ass.)

This argument gives a warrant for not-accepting the existence of a cut-off for "LH(x)". On the other hand, since the No Sharp Boundary paradox can be seen as argument for the rejection of the negation of the claim of the existence of a cut-off, we have a principled reason to resist.

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37 The No Sharp Boundary paradox is sorites paradox having as major premise the negation of the existence of the cut-off (see Read and Wright (1985)).
Double Negation Elimination for compound statements and, consequently, to be agnostic about Bivalence.

The above deduction gives the basis for advancing a form of agnosticism on vagueness that can be called, since it is based on MEP, *Reliabilist Agnosticism.*

### 3.3 Two Varieties of Agnosticism

To sum compare the different options in the vagueness debate it is useful to complete the taxonomy of the positions introduced in Wright (2003b) mentioning the two varieties of agnosticism that I have discussed. To do that, I have to specify whether a principle is simply non-accepted or rejected, the former involve open-mindness about the principle while the latter commits to the acceptance of its negation (Third Possibility is the view that borderline propositions fail to have a polar value).

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<th>Third Possibility</th>
<th>Bivalence</th>
<th>Verdict Exclusion</th>
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<tr>
<td>Indeterminism</td>
<td>Accept</td>
<td>Reject</td>
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<tr>
<td>Exclusive Epistemicism</td>
<td>Reject</td>
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<tr>
<td>Non-Exclusive Epistemicism</td>
<td>Reject</td>
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<tr>
<td>Reliabilist Agnosticism</td>
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As it is clear from the table above the crucial difference between Anti-realist Agnosticism and Reliabilist Agnosticism is that the former has to reject Verdict Exclusion because it is inconsistent with EC. On the other hand, the reliabilist agnostic is not hostage to this inconsistency and can be genuinely open minded about Verdict Exclusion.

### 4 Objections and Replies

#### 4.1 Objection 1: Sorites Indiscriminability is not Necessary True - the case of hyper-opinionated thinker

Consider an optimistic epistemist according to who there are available means to discover the cut-off, and suppose that, after an enquiry about the matter, she believes to have discovered the cut-off. The dispositions of such a theorist would then be suitably modified to stubbornly believe that, say, an hedge counts as looking higher than 1.49 just in case it is higher...
than 1.4870 meters. Thus Sorites Indiscriminability would be false in relation to her, her hyper-opinionated state about $\neg LH(x)$ would be such that even along a sorites reasoning it would never be a close possibility that she believes that a hedge that is 1.4870 meters high counts as looking higher than 1.49 meters while believing that a 1.4869 meters high hedge counts so as well. 38

4.1.1 Reply to Objection 1

The objection is not meant to show that the hyper opinionated thinker would know the cut-off, for a margin for error principle constitute only a necessary constraint on knowledge. Rather, the objection is meant to show that, if the cut-off exists, the margin for error based on (SI) would fail to deliver the result that the hyper-opinionated thinker would lack knowledge. But why should it be necessary that any thinker would lack knowledge of the cut-off?

If the cut-off the exists, it might very well be that there is a method to for knowing it (both psychological epistemicism and reliabilist agnosticism can consistently leave open this possibility).

The case of the optimist epistemicist offers such a scenario. If her enquiry meets scientifically accepted standards and if there is a cut-off located where she believes the cut-off is, then she might happen to have knowledge of the cut-off. We find unintuitive such a possibility because our vague concepts are deeply rooted into dispositions that lead us to find repellent that, say, one millimetre can make a difference as to whether “looks higher than 1.49 meters” can be truthfully applied. If there will ever be a discovery like that, we will have to give up these firmly entrenched dispositions, and this might involve a conceptual shift in our understanding of vague concepts.

If on the other hand, the hyper-opinionated thinker is unreasonably opinionated, i.e. if she offers no valid reason for her stubbornness, then this lack of justification would be sufficient to disqualify her opinion as knowledge (in the best case scenario it would be a belief true by mere luck). 39

38I owe this objection to Timothy Williamson.
39For a similar line of response see Hawthorne (2006) p.201.
4.2 Objection 2: Soriticality of Sorites Indiscriminability

Sorites Indiscriminability is soritical. Suppose you are involved in a sorites reasoning with “looks higher than 1.49 meters” starting with the belief that hedge 5 meters high does look higher than 1.49 meters. By (SI) there is a close case, say one with a hedge 4.99 meters high, in which you believe that the next object of the series looks higher than 1.49 meters, and from this world there is another close case, one where you consider a 4.98 meters high hedge, where you believe that this latter hedge looks higher than 1.49 meters, and so on. Hence, by several repetitions of the application of (SI), there is a case where you come to believe that a hedge 0.1 meters high looks higher than 1.49 meters, but this is impossible.

4.2.1 Reply to Objection 2

The argument put forward in the above objection concludes that that there is a possible world - a case is a centred world - in which you believe that a 0.1 meters high hedge looks higher than 1.49 meters. But notice that since the accessibility relation we are using is meant to capture the relation of indiscriminability, the relation is not transitive. Thus the conclusion of the objection amounts to the truth of a sentence of the following form: $\neg\diamond^n(you \ believe \ that \ a \ 0.1 \ meters \ high \ hedge \ looks \ higher \ than \ 1.49 \ meters)$. Since it is a very distant world, there seems to be nothing problematic in allowing such a possibility.

Counter-Objection: The mere observation that such the possibility of believing that a 0.1 meters high looks higher than 1.49 meters does not dispel the problem of the Sorites Indiscriminability. Surely SI must put some conditions on the agent who re subject to this principle, otherwise you would have trivial failure of it (consider for example an agent suffering of a brain problem such that he cannot form, such that, for example, when his perceptual system is exposed to a 1.50 meters high hedge he cannot form the belief that the hedge looks higher than 1.49 meters. SI must thereby limited to epistemically competent [reasonable, responsible] agents. But if this is so, then there is dilemma: either in close cases the competence of the agent is the same (e.g. she uses the same method but she is slightly less attentive) or it is not; if the competence is the same, the conclusion of the former argument is that am epistemically compe-
tent speaker can form the belief that a 0.1 meters high looks higher than 1.49 meters, which surely implausible since having such belief seems to be a necessary condition for being epistemically competent. On the other hand, if the competence is not the same in the close cases, than the former conclusion is no more problematic since several slight variations in the epistemic competence can add to a big drop in competence and thus allow having crazy beliefs. However, but allowing slight changes of competence in close cases put into question Sorites Safety as an a priori constraint on knowledge: why would it be relevant for having a reliable belief that in cases where my competence has changed I should lack any false belief? The reliability of my actual belief cannot be impugned on the basis cases where the belief-forming mechanism works under worse conditions.

**Reply to the Counter-Objection:** Both horns of the dilemma can be challenged. Let’s consider each of them:

1. Epistemically competent agents can have crazy beliefs. People can come to have the strangest beliefs for the strangest reasons without being losing their rationality. Consider, for example, the former case of the hyper-opinionated thinker. Suppose such a thinker believes because of very cumbersome and complicated theory in the relationship between use and extension of vague predicates that the cut-off of 'looks higher than 1.49 meters' is located between heights which are less than 0.1 meters. He thereby re-adjust his beliefs accordingly believing that a 0.1 meters high looks higher than 1.49 meters. Has he lost his epistemic competence in doing so? No, he perfectly aware of the evidence provided by a 0.1 meters high in relation to the application of the the predicate 'looks higher than 1.49 meters' he just thereby thinks that he has theoretical reasons sufficient to trump the support of this evidence.  

2. A belief-forming mechanism must be robust when operating in a hostile environment. Better be that slight variations, e.g. damages caused by the external environment, do not compromise its efficiency in guiding the action for in this way it is more likely that the strategies set to survive can be successfully carried

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40The reply goes along Williamson’s critique to the idea that there are beliefs necessary for being competent in speaking a language. CLARIFY THE RELATIONSHIP BETWEEN EPISTEMIC COMPETENCE AND LINGUISTIC COMPETENCE.
4.3 Objection 3: Sorites Safety is Incompatible with Vagueness

Sorites Safety states that if you believe that an hedge looks higher than 1.49 meters there in no close possibility where you falsely believe that a hedge one centimetre less high has the same look. But how could you have such a false belief? How can a tiny difference in height of hedge possibly make a difference in whether or not it is true to apply to ‘it looks higher than 1.49 meters’? How can the look of something change because of small differences that we would not discriminate? It seems that in order to accept this safety principle we have already to be committed to the idea that vague expressions do have a cut-off, for otherwise the principle would be always trivially satisfied.

4.3.1 Reply to Objection 3

The objection contains at least three charges which is better disentangling:

1. The latter claim amounts to the commitment to the existence cut-off for ‘it looks higher than 1.49 meters’.

The theory presented above is silent on whether or not there is a cut-off for vague predicates; it is just committed to the conditional claim that, if there is a cut-off, then we have inexact knowledge of it. Acceptance of bivalence, hence of the existence of the cut-off, is a further and logically independent commitment.

2. SSafe commits nonetheless to the incredible claim that a tiny (small as much as you want) difference in in height of a hedge can make a difference in whether it looks higher than 1.49 meters. SSafe does not even commit the existence of a possibility where I have such a false belief, it just states, contrapositively, that if there is such possibility than I lack knowledge that, for example, a hedge with a certain height looks higher than 1.49 meters.

Counter-objection: if there is no cut-off, you would not exclude then the possibility where it is believed, say, that a 0.1 meters high hedge looks higher than 1.49 meters (the existence

CONSIDER THE CASE OF TW’S EPISTEMICISM: WHY UTTERANCE WITH A SLIGHT DIFFERENT CONTENT RELEVANT? WHAT ABOUT BELIEF (SEE Sainsbury (1997)).
of which you are committed by repeated application of Sorites
Indiscriminability, see above §4.2) is a case of knowledge.

**Reply to the Counter-objection:** Knowledge in a certain case
that a 0.1 meters high hedge looks higher than 1.49 meters
requires, by factivity, that in such case the hedge does look
higher than 1.49 meters. It seems to be that the only way to to
be committed to the latter truth is that you have already fallen
victim of the sorites. In such a disastrous situation it is true
that the view presented above does not give any clue on how to
distinguish a soritically true belief on these soritical from cases
where you have genuine knowledge. However, it is only with this
further, and crazy, commitment the the soritical consequences
of a vague predicate that we would have such a situation. Since
we here assume that assertion that there is not-off is incoherent
(since it commits, by basic logical reasoning, to the plainly false
that a 0.1 meters high hedge looks higher than 1.49 meters) the
problem presented by the latter objection does not even arise.

3. If I am not committed to the existence of a cut-off, SSafe is trivially
true and thus explanatory useless.

The view a presented above is not sufficient to a theory of vagueness.
There is not explanatory role independently of further commitment
of certain views on vagueness. The explanatory role of the margin for
error principle varies in relation to at least two different applications:
to epistemicism and to agnosticism (see above §3).

**4.4 Objection 4: Agnosticism is incompatible with Reliabilism**

It might be objected that an agnostic stance is incompatible with ac-
cptance of a margin for margin for error principle since the margin of
error principle has been used by some Exclusive Epistemicist - notably by
Williamson - to argue for Verdict Exclusion.

**4.4.1 Reply to Objection 4**

The objection fails, since - as even Williamson acknowledges - the mar-
gin for error principle implies Verdict Exclusion only together with the
assumption of the existence of a cut-off point, and this is exactly what is
shown by the above deduction. The point of the Revisionary Deduction is precisely to not-accept the unpalatable conditional in the presence of Permissibility and the acceptance of the Margin for Error Principle.

**Counter-Objection 1:** Acceptance of MEP not only involves non-acceptance of EC but its rejection. In fact we know that margin for error principle is this kind is inconsistent at least with luminosity of knowledge - the principle that whenever we are in a position to know p we thereby in a position to know this latter fact. Since the rejection of EC is incompatible with the non-acceptance of Verdict Exclusion, MEP cannot be accepted. In fact we know that:

\[
\{ (\forall x)(\text{LH}(x) \supset \text{K}[\text{LH}(x)]), (\forall x)(\text{K}[\text{LH}(x)] \supset \text{LH}(x')), \neg \text{LH}(n) \} \vdash \bot
\]

hence, if we accept MEP, we have to reject EC, that is

\[
\neg (\forall x)(\text{LH}(x) \supset \text{K}[\text{LH}(x)]).
\]

**Reply to Counter-Objection 1:** The latter formula is not sufficient to assert Verdict Exclusion, since in order to be committed to unknowable facts we would have to assert

\[
(\exists x)(\text{LH}(x) \land \neg \text{K}[\text{LH}(x)]).
\]

but intuitionistically the latter formula does not follow from the former. Hence if by “rejection of EC” we merely mean the acceptance of the negation of EC, there is no contradiction with the non-acceptance of Verdict Exclusion - provided we are using intuitionistic logic. A reliabilist agnostic rejects the idea that every truth can be know (via some method), but, nonetheless, he does not want to be committed to saying that there are unknowable truths since he does not have sufficient reasons to make such a statement.

**Counter-Objection 2:** It could be objected that the reliabilist agnostic is not simply open-minded towards Verdict Exclusion but sympathtic since, rejecting EC, she is committed to the negation of the possibility of the existence of knowable truths (via some methods).

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42 See Williamson (1994) p.234 where Williamson clearly states that “without appeal to the epistemic account of vagueness, one can argue that if vague terms have sharp boundaries, then we shall not be able to find those boundaries” (italics mine). See also Mahtani (2004) for a similar point.

43 I owe this objection to Crispin Wright.

44 The luminosity principle for knowledge is also know as “KK”. See Williamson (1994) p.217-226 and Wright (2003a) p.469.

45 For the sake of simplicity I omit here to make reference to thinkers.
Reply to Counter-Objection 2: The objection overlooks the analogy between agnosticism about vagueness and mathematical intuitionism: as it would be misleading to say that since the mathematical intuitionist accepts the double negation of bivalence is sympathetic to this semantic principle, it would be analogously misleading to say the since the reliabilist agnostic accepts the negation of EC she is sympathetic to Verdict Exclusion. To affirm the contrary would mean to equivocate the reason for the non-acceptance of these principles: it is precisely because the intuitionist lacks a warrant for Bivalence - because of her constructivist conception of what is proof - that she is committed to its non-acceptance of Bivalence though rejecting its negation - Third Possibility. Analogously, it is precisely because the reliabilist agnostic lacks a warrant for Verdict Exclusion that she is committed to its non-acceptance though rejecting its negation - EC.

4.5 Objection 5: Reliabilist Agnosticism cannot make justice to the adoption of intuitionistic logic

The Revisionary Deduction seems motivates non-acceptance of DNE for compound statements. Such a situation could seem as a reason to revise classical in favour of intuitionistic logic. But the standard interpretation of intuitionistic logic is based on the acceptance of EC. Given, as we have previously acknowledged, that MEP involves the rejection of EC, the acceptance of intuitionistic logic seems to be undermined by the impossibility to adopt the standard interpretation for intuitionistic logic.

4.5.1 Reply to Objection 5

The use of intuitionistic logic in relation to vagueness can be independently motivated. Remember that the Revisionary Deduction is an argument that leads to the non-acceptance of DNE. This kind of agnosticism uses intuitionistic logic not because of a belief that classical logic is incorrect, but because of a methodological caution. Granted the non-acceptance of Verdict Exclusion, we have to be agnostic about DNE. Intuitionistic logic is compatible with this caution, but is not entailed by it. In other words this form of agnosticism about vagueness does not imply logical revisionism. 46

46In fact, in the Quandary paper Wright argues for revisionism of classical logic by way of quandarysm and EC (Wright (2001) p.76-78). His form of agnosticism does commit him to
4.6 Objection 6: The Entitlement Intuition is unmotivated

Suppose a vague predicate has a cut-off. By monotonicity local bivalence for atomic statements involving the vague predicate holds. Take any borderline proposition \( p \). Since \( p \) is true or false, one polar verdict is certainly wrong. We know thus that in advancing a verdict in the borderline area we might wrong, and hence we know that, lacking any information on what is the case in the borderline area, we are not entitled to take a view.

4.6.1 Reply to Objection 6

Knowledge that we might be wrong does not conflict with the Entitlement Intuition: though we are entitled to take view we know that two conflicting views cannot be both right. However knowledge that one of us is indeed wrong stems from knowledge that local bivalence holds, how do we know this? If it is derived from putative knowledge of the existence of the cut-off, we might ask the same question: what evidence can we provide in favour of this claim?

Counter-Objection: Take any vague predicate, surely it is not knowledgeable to assert the location of the cut-off point, say \( K(Pn \land \neg Pn') \). Given the additivity principle on knowledge - \((Kp \land Kq) \supset K(p \land q)\), it follows that either \( \neg K(Pn) \) or \( \neg K(Pn + 1) \). Suppose the cut off of \( P(x) \) lies in between \( n \) and \( n + 1 \), hence \( \neg K(Pn) \land \neg K(Pn + 1) \). Hence we have \( \neg K(Pn) \land \neg K(Pn + 1) \) or \( \neg K(Pn + 1) \). Since the location of cut-off is unknown, given any two adjacent borderline cases it is rationally mandated to suspect that in at least one of them any polar verdict is not knowledgeable. But this is inconsistent with recognizing an entitlement for a thinker to take a view in such case. Thus we have undermined the grounds for for claiming that the Entitlement Intuition holds for any specific borderline case.

Reply to Counter Objection: The reasoning by cases is valid only insofar as we accept the existence of the cut-off. In fact, the supposition that in two arbitrarily borderline cases there is a cut-off can be discharged only with this assumption.

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revisionism. My point is simply that not all forms of agnosticism have to be revisionist.
Appendices

A Derivation of a Margin for Error Principle

1. (1) \(|v(a) - v(b)| < c\)
2. (2) \(K_a[C]\)
3. (3) \(\forall a \forall \alpha ([n - v(a)] < c \land B_a[C]) \supset \exists \beta (Close(\beta, \alpha) \land v(\beta) = n \land B_\beta[C])\)
4. (4) \(\forall n([n - v(\alpha)] < c \land B_\alpha[C]) \supset \exists \beta (Close(\beta, \alpha) \land v(\beta) = n) \land B_\beta[C]\)
5. (5) \(\forall \alpha \forall \beta (K_\alpha[C] \supset B_\beta[C]\)
6. (6) \(K_a[C] \supset B_a[C]\)
7. (7) \(B_\alpha[C]\)
8. (8) \(|v(a) - v(b)| < c \land B_a[C]\)
9. (9) \(\exists \beta (Close(\beta, \alpha) \land v(\beta) = v(b) \land B_\beta[C])\)
10. (10) \(Close(a, d) \land v(d) = v(b) \land B_d[C]\)
11. (11) \(\forall a, \beta (\exists \beta (Close(\beta, \alpha) \land K_a[C]) \supset \neg (\neg C_\beta[\land B_\beta[C]])\)
12. (12) \((\exists \beta (Close(a, d) \land K_a[C]) \supset \neg (\neg C_\beta \land B_\beta[C]))\)
13. (13) \(Close(a, d)\)
2,10
14. (14) \(Close(d, a) \land K_a[C]\)
2,10,11
15. (15) \(\neg (\neg C_\beta \land B_\beta[C])\)
16. (16) \(\neg C_d\)
10
17. (17) \(B_d[C]\)
10,16
18. (18) \(B_d[C] \land \neg C_d\)
2,10,11
19. (19) \(\neg \neg C_d\)
2,10,11
20. (20) \(C_d\)
10
21. (21) \(v(d) = v(b)\)
22
22. (22) \(\forall a, \beta (v(a) = v(\beta) \supset (C_a \equiv C_\beta))\)
23. (23) \((v(d) = v(b) \supset (C_d \equiv C_b))\)
10, 22
24. (24) \((C_d \equiv C_b)\)
2,10,11,22
25. (25) \(\neg \neg C_b\)
1,3,5,11,22
27. (27) \(K_a[C] \supset (\neg \neg C_b)\)
3,5,11,22
28. (28) \(|v(a) - v(b)| < c \supset (K_a[C] \supset (\neg \neg C_b))\)
29
29. (29) \(\Pi \Pi \Pi \Pi \Pi \Pi \Pi (P \supset (Q \supset R)) \supset ((P \land \Pi) \supset \Pi)\)
30
30. (30) \(|v(a) - v(b)| < c \supset (K_a[C]) \supset (\neg \neg C_b)\)
31
31. (31) \(|v(a) - v(b)| < c \land K_a[C] \supset \neg \neg C_b\)
3,5,11,22
32. (32) \(\forall a \forall \beta ([|v(a) - v(\beta)| < c \land K_a[C]]) \supset \neg \neg C_\beta\)
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The derivation of MEP-Ign from MEP-Vag

The following proof shows how to derive the MEP-Ign from MEP-Vag in the case of the condition that a person with 104 is bald. To get the theorem, we need to use the principle of Extensional Plasticity according to which slight variations in the overall use involve slight variations in the extension in close worlds:

\[(\text{Extensional Plasticity})\]

\[
\forall \alpha, \beta \left[ \left( |p(\alpha) - p(\beta)| = k \right) \wedge k < c \right] \supset (T(\lceil V \rceil)_\alpha \equiv T(\lceil [p(\alpha), \beta] \rceil)_\beta)
\]

Since a difference in meaning entails a difference in extension, Semantic Plasticity is entailed by Semantic Plasticity. The following proof shows how MEP-Vag together with Extensional Plasticity entails MEP-Ign.

\[
\begin{align*}
1 & \quad \forall \alpha, \beta \left[ \left( |p(\alpha) - p(\beta)| = k \right) \wedge k < c \right] \supset (T(\lceil L(1.49) \rceil)_\alpha \equiv T(\lceil [p(\alpha), \beta] \rceil)_\beta) \\
2 & \quad (\forall \alpha, \beta \left[ \left( |p(\alpha) - p(\beta)| < c \right) \wedge K_p[T^r L(1.49)] \right] \equiv T(\lceil L(1.49) \rceil)_\alpha) \\
3 & \quad \exists \alpha \exists \beta \left[ \left( |p(\alpha) - p(\beta)| < c \right) \right] (\text{Ass.}) \\
4 & \quad |p(P) - p(Q)| < c \\
5 & \quad (\forall \alpha, \beta \left[ \left( |p(\alpha) - p(\beta)| = k \right) \wedge k < c \right] \supset ((T^r L(1.49))_\alpha \equiv T(\lceil [p(\alpha), \beta] \rceil)_\beta) \\
6 & \quad K_p[T^r L(1.49)] \\
7 & \quad (\forall \alpha, \beta \left[ \left( |p(\alpha) - p(\beta)| < c \right) \wedge K_p[T^r L(1.49)] \right] \equiv T(\lceil L(1.49) \rceil)_\alpha) \\
8 & \quad T^r L(1.49) \supset T(\lceil L(1.49) \rceil)_\alpha \\
9 & \quad T^r L(1.49) \supset T(\lceil L(1.49) \rceil)_\alpha \\
10 & \quad K_p[T^r L(1.49)] \supset T^r L(1.49) \\
11 & \quad (\exists \alpha \exists \beta \left[ \left( |p(\alpha) - p(\beta)| < c \right) \wedge K_p[T^r L(1.49)] \right] \equiv T(\lceil L(1.49) \rceil)_\alpha)
\end{align*}
\]

This result can be generalised to obtain

\[\text{MEP-Ign-Look} \# \quad \forall \alpha \exists x \left( K_p[l(x)] \right) \supset P(x')_\alpha\]

which is the margin for error principle used by Williamson. \(^{47}\)

S-MEP entails the cut-off is unknown

(S-MEP) entails that the cut-off of \(\lceil L(x) \rceil\) is unknowable:

\(^{47}\)MEP-Ign is used by Williamson in Williamson (1994) p.232.
that there is a true sentence of the form $\neg \exists \alpha[|\alpha| < 2 \land K_\alpha[P(\alpha)]] \supset \neg \neg P(\beta)$. (MEP)

The derivation shows that margin for error principles entails that, whether or not a cut-off for a vague predicates exists, the proposition that expresses such cut-off is unknown. The epistemicist, who asserts the existence of cut-off for vague predicates, is thus committed to the claim that there is a true sentence of the form $\neg P(h - 1) \land P(h)$ which is unknown.

References


