BORDERLINE CASES, INCOMPATIBILISM AND PLURIVALUATIONISM

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1. OVERVIEW

Diana Raffman's book "Unruly Words" is a remarkable achievement and contribution to the study of vagueness. Parts of Raffman's book had circulated since at least 2008, in particular the last chapter (chapter 5), in which Raffman presents experimental results about dynamic sorites and discusses the phenomenon of *hysteresis*. My own work over the same period, like that of several colleagues and theorists of vagueness, was considerably influenced by that specific chapter (as well as earlier work by Raffman),[1] and to me the book would already deserve praise if it revolved around just that chapter. But the book contains many more ideas beyond that, equally exciting and thought-provoking. Right away I want to highlight three essential aspects in which the book innovates.

First of all, the book presents a positive account of the essence of vagueness, defined as "ineliminable arbitrariness" in the setting of boundaries. In so doing, the book boldly relegates the usual symptoms of vagueness to a secondary status (such as sorites-susceptibility; an essential connection between vagueness and gradability; or even the possession of borderline cases; see chapters 1, 2 and 4).

Secondly, the book gives a new characterization of borderline cases of application of vague predicates (chapter 2). The account, which Raffman calls the "incompatibilist account", treats borderline cases fundamentally as cases of underlap between contrary categories. By so doing, Raffman aims at defending a classical semantics for vagueness, without endorsing either epistemicism or supervaluationism.

Thirdly, the book outlines an intensional semantics for vagueness, inspired by Kaplan's semantics for indexicals (chapters 3 and 4). Like Kaplan's semantics, Raffman's semantics involves two levels of meaning, analogous to Kaplan's character and content. The first level, which Raffman calls the *stable content* associated to a vague expression (like "rich"), selects what Raffman calls a *V-index*, namely a respect of application (e.g. salary), a contrastive category (e.g. *middle income*), a comparison class (e.g. Americans aged 40 to 60), and a world. Stable content and V-index together determine a second level of meaning, which consists of a set of multiple *ranges of applications*, namely values (e.g. salary ranges) among which a competent speaker may legitimately select to apply the predicate to particular objects in a given context. That second level in turn, relative to a circumstance of evaluation, determines a set of multiple extensions for a predicate.

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[1] See (Egré, 2009), (Egré, 2011), and (Egré et al., 2013).

By the distinction between two levels of meaning, Raffman can account not only for extensional vagueness (handled by the multiple range theory), but also for intensional vagueness (handled by appeal to V-indices). Too few accounts before Raffman's have taken the notion of intensional vagueness seriously. Consider the predicate "rich". "Rich" can be applied not just to agents, but also to corporations or to countries, for instance, in which case salary would no longer be relevant – some notion of income probably would, but it would have to be defined accordingly. The adjective "rich" can also be applied to meals, in which case levels of income or salary no longer apply, but number of calories might. Even as you fix a comparison class and a contrastive category, moreover, the dimension of comparison relevant to "rich" can vary (for agents, do we consider only their salary, or also their assets? as for meals, do we consider only calories, or how oily or meaty the meal is?).

A major strength of Raffman's approach is that she can account for a range of phenomena that previous accounts have neglected, such as the polysemy of vague expressions, and an essential connection between vagueness and multidimensionality. As Raffman summarizes (pg. 134): "multidimensional vagueness is an unclarity in the sense of a vague term, whereas soritical vagueness is an 'unclarity' – here a multiplicity – in the reference". What I want to question is primarily the referential part of her account, though my divergences are often grounded in agreement with key elements of the general picture.

My first question concerns Raffman's characterization of the essence of vagueness, in terms of permissibility of multiple stopping points in a sorites series, and her view that vagueness is less fundamentally tied to soriticality than to referential multiplicity. The view implies that referential multiplicity is more fundamental to vagueness than tolerance. I am in sympathy with part of this view, at least with the idea that vagueness and soriticality need not always coincide. However, I think it can be motivated in ways that imply a stronger connection between vagueness and open texture than Raffman supposes.

My second point concerns Raffman's characterization of borderline cases. I agree that borderline status implies some notion of underlap between opposing categories, but this characterization remains incomplete: a dual notion of overlap is also needed, both for semantic and for epistemological reasons. Finally, I will question whether Raffman is right in claiming that the referential part of her account differs substantially from supervaluationism.

2. Vagueness: soriticality, or referential multiplicity?

Raffman rejects the idea of a definitional connection between vagueness and sorites-susceptibility. For Raffman, referential multiplicity is more fundamental to vagueness than the principle of tolerance (Wright's idea that we can find dimensions of application on which small variations should not affect category membership, see (Wright, 1976)). Her main argument against soriticality is as follows: "soriticality is an illusory feature of words like "tall" and "rich"; their vagueness is real" (pg. 19). Indeed, for Raffman, the major premise of a sorites is "necessarily false" (pg. 122), since it is part of the meaning of vague words, according to Raffman, that one has to stop applying them at some place before the end of a sorites series. I take this to mean that a vague word cannot, in virtue of its

meaning, necessarily apply to either everything or to nothing, it must apply to something, and fail to apply to something (this feature is obviously shared by some precise predicates, such as "even number", but not by all). A sorites series is defined as a gradual transition from an object to which the predicate applies, to an object to which it fails to apply. We therefore have to find adjacent cases, in a sorites series, whose semantic status differs relative to the predicate.

Granting the argument, one might hope to rescue the idea of an essential connection between vagueness and soriticality by saying that a predicate is vague if *there exists at least one* context in which it would generate a sorites. (Burnett, 2014) presents contexts in which the adjective "expensive" is not soritical, but argues that what matters to its vagueness is the existence of at least one context where we can generate a sorites sequence. If Raffman is right, however, we should be able to find predicates that are vague but for which we know in advance that they are not soritical in any context.

Are there such predicates? We can construct one, in support of Raffman's view. Imagine a predicate 'glumber' defined so that all and only integers equal to or smaller than 1 are glumbers, while integers equal to or larger than 3 are not (Raffman considers a similar predicate, the predicate "srich", see pg. 104 of her book). Assume we have as a further rule that *we can apply or withhold "glumber" of 2 as we please*. I might on one occasion count 2 as a "glumber", and on another deny that it is a glumber. I believe "glumber" is a vague predicate by Raffman's standards. The predicate does have multiple permissible stopping points (viz. 1 and 2), between mandatory points of application and exclusion. But "glumber" is defined in a way that makes it nonsoritical.

3. Open texture and Arbitrariness

One objection to "glumber" is that possibly no predicate of natural language comes with an explicit license to apply the predicate arbitrarily over a specific range. However, I think many of our concepts are like "glumber" insofar as i) they necessarily leave cases semantically unsettled, and ii) they leave further criteria of application at our discretion. Most of our qualitative concepts are acquired from a limited set of exemplars. We categorize colors based on our memory of typical cases, but most of the hues we come to categorize never exactly match cases previously encountered. Similarly, consider the case of the concept "planet", and the problem faced by astronomers, of deciding whether the celestial body Eris, discovered in 2005, ought to be categorized as a planet or not (see (Brown, 2010), (Egré, 2013)). Eris did not immediately appear as a member of a soritical series (though it later came to be viewed that way). Instead, it first came across as a case to which the word "planet" appeared both applicable and deniable, based on the observation of similarities and dissimilarities with objects previously categorized under "planet".

As I see it, another route to Raffman's view that soriticality is not fundamental to the definition of vagueness is therefore to say that most of our concepts are semantically incomplete or open-textured. Waismann defined open texture as the "possibility of vagueness" (Waismann, 1945), thereby suggesting that a concept has open texture if it has potential cases left unsettled by extant criteria of application. Raffman acknowledges the connection

between vagueness and open-texture in her book. She writes: "presumably the biologists cannot foresee all possible plants between strawberries and raspberries, or all possible animals between dogs and wolves" (pg. 125). Despite that, she dismisses the relevance of that connection to her account: "nevertheless, when they do encounter an intermediate case, their classification of it will not be arbitrary (or so I am supposing), and a word has blurred boundaries only insofar as there can be cases with respect to which any classification must be arbitrary" (ibid.).

But arguably, the sense in which Raffman uses "arbitrary" in the previous passage differs from what she intends elsewhere when she talks of essential arbitrariness. The main reason the scientists' classification of borderline cases may not be called "arbitrary" is that scientists generally resolve vague cases by appeal to further evidence and by betting on the inductive strength of their taxonomies.[2] But arguably, naive subjects do the same when they categorize colors at the borderline between blue and green: they may feel that nothing *mandates* applying "blue" rather than "green", but their actual decisions when taken may not be completely arbitrary. When we adjudicate a case, we generally resolve vagueness in the way we consider to be the most predictive of our future decisions, or the most coherent with past decisions. We rarely, after all, take decisions that are completely indifferent. My point, in a nutshell, is that a decision may be called "arbitrary" either because it is *not mandated* (as Raffman argues of borderline cases), or because it is *groundless* (indifferent, based on no reason). The first sense need not entail the second: I can have reasons to resolve a borderline case one way or another, while still seeing the legitimacy of alternative resolutions. The upshot is that the existence of reasons for resolving vagueness is not a sufficient argument to dismiss the connection between vagueness and open texture.

4. HIGHER-ORDER VAGUENESS AND BLURRED BOUNDARIES

As I defined "glumber", "glumber" is first-order vague, because it has multiple permissible "stopping points". But is that enough to count "glumber" as vague? Raffman's answer to this question is negative, judging from her treatment of the analogous predicate "srich" (which competent speakers apply by stopping arbitrarily at 120,000, 199,999 or 198,998 \$). She considers that "any vague word sustains a form of higher-order vagueness" (pg. 71). For Raffman, the higher-order vagueness of P means that the predicate "range of application of P" could in turn have different ranges of application depending on the speaker, and so on, indefinitely (see pg. 107). But all competent speakers, as I set the example, should agree that the range of application of "glumber" is exactly the set of values $\{\lambda x.x \leq 1, \lambda x.x \leq 2\}$. This would prevent "glumber" from being second-order vague (as Raffman argues for "srich").

I am asking two questions based on this example. The first is whether the first-order vagueness of a predicate ought to analytically entail its higher-order vagueness. This point is unobvious to me, and I could accept that some predicates are vague (in Raffman's sense, and in the intuitive sense) without being second-order vague. My second question

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[2]For more on this see (Egré, 2013) and further joint work with Cathal O'Madagain, (Egré and O'Madagain, 2014).

concerns the connection Raffman establishes between the possession of blurred boundaries and higher-order vagueness. Raffman defines blurriness in terms of higher-order vagueness. Because higher-order vagueness is defined in terms of iterations of the function "range of application of X", blurriness for Raffman implies at least second-order vagueness. But isn't blurriness definable already at the first-order level? I think it is enough, for "glumber" to have blurred boundaries, that on some occasions of use, "glumber" stops at 1, and on others that it stops at 2. If so, blurriness could be a property we ascribe to a vague predicate based on the variability of its reference (the level of V-extensions), and not necessarily on the variability of its V-index relative content (the level of ranges of application).

Note that I do not deny the adequacy of Raffman's analysis of higher-order vagueness.[3] All I challenge is: (i) the idea that every first-order vague predicate ought to be higher-order vague, and (ii) the idea that blurriness ought to be captured in terms of higher-order vagueness.

5. Borderline cases

My principal point of divergence with Raffman's account of vagueness concerns her treatment of borderline cases. Raffman makes four main claims about borderline cases. The first is a semantic claim: borderline cases of a vague predicate P semantically count as not P (a borderline tall man is not tall). The second is an epistemological claim: borderline cases of a predicate P are not adequately described as cases falling in a gap between determinate cases of P and determinate cases of not-P, but as cases that fall in a gap with cases of some proximate positive property P^* (a borderline tall man falls in the gap between tall people and average persons, not between tall persons and not tall persons). The third claim is that "the common definition of vagueness as possession of (possible) borderline cases is incorrect" (pg. 70). A fourth claim is that borderline cases of P are not thereby borderline cases of not-P (a borderline-tall man is not automatically a borderline-not-tall man).

Let me start with the third claim. I am not willing to give up the connection between vagueness and the existence of borderline cases. To my mind, the existence of (potential) borderline cases is fundamental to the phenomenology of vagueness. Consider the case of Eris, of which its discoverer Mike Brown first asked: "Planet or not[?]" (see (Brown, 2010), (Egré, 2013)). Brown describes himself as originally torn between the application and the denial of the predicate "planet". What Wright describes as "being in a quandary" (Wright, 2001) seems to me to be fundamental to our recognition of vagueness as such. Being in a quandary, moreover, is a distinctive state, different from a state of factual ignorance. Brown felt he could go either way, but he also felt that the consequences of his choice were not indifferent.

The brings me to Raffman's second claim. According to Raffman, borderline cases fundamentally are cases of underlap between two proximate categories. They fall between contraries, rather than contradictories. I think part of this view is correct, but I think it is

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[3]Raffman's analysis of higher-order vagueness bears some elements in common with the analysis of higher-order vagueness proposed independently by (Ripley, 2013), which I find appealing on similar grounds.

incomplete and that it fails to be fully explanatory. I agree that borderline status implies a notion of proximity between categories, but I think the account fails to capture the friction that results from that proximity. What is correct is that vague categories are constituted around typical or paradigmatic values which, by their very nature, leave a gap with other paradigmatic values, constitutive of distinct categories. What is missing is that borderline cases are primarily cases of *overlap* between the regions or aspects determined by those paradigmatic values.[4] My sense is that the only nonepistemicist prospect of explaining the ambivalence or quandary felt in borderline cases is as resulting from such overlap between categories. Consider a 12-year old of whom you are wondering whether he is still a child or already an adolescent, or a hue about which you are hesitant whether it is orange or yellow. This young person has the clear voice of a child, but also a nascent moustache. This particular hue has some yellowness in it, but some orangeness too. We have a borderline case between two proximate categories when the object in question has features in common with paradigmatic cases of both categories.

A further reason to view borderline cases as cases of overlap, rather than underlap, is that subjects are not unwilling to describe borderline cases of P as "both P and not P" (see (Ripley, 2011), (Alxatib and Pelletier, 2011), (Serchuk et al., 2011), (Cobreros et al., 2012), (Egré et al., 2013)). Raffman accepts that "patch #15 (for example) could competently be classified as blue, as not-blue, as green, as not-green, and as (...) neither blue nor green" (pg. 42). But she seems reluctant to acknowledge combinations such "blue and green", and similarly "blue and not blue". I agree with Raffman that borderline cases can be described as "neither blue nor green", but in line with the strict-tolerant account of vagueness which I and my colleagues have defended elsewhere ((Cobreros et al., 2012)), I think that speakers can use "neither blue nor green" as shorthand for "neither determinately blue nor determinately green". Moreover, our account borderline cases may be described in a dual fashion as "blue and green", to mean "somewhat blue and somewhat green".

This leads me to Raffman's first claim about borderline cases. In the terms of the view my coauthors and I recommend, Raffman's semantic claim that a borderline-P case is not P corresponds to the idea that a borderline-P case is not part of the strict extension of P (or that P is not strictly assertible of the object in question). This is a correct characterization, but we also think there remains a legitimate sense in which a borderline case can be said to be P. This sense reflects what we call the tolerant extension of the predicate (the fact that the case is not strictly not P either).

Regarding the fourth point, I see no compelling reason to surrender a symmetric view of borderline cases, whereby a borderline case of P is also a borderline case of not-P. In particular, naive subjects are also willing to classify borderline cases of a predicate P as "neither P nor not P" (see (Alxatib and Pelletier, 2011) on "neither tall nor not tall"

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[4]For a more detailed view of the underlap-overlap duality, see (Douven et al., 2013), who present a geometric account of borderline cases in terms of underlap between prototypical regions and overlap between the extended regions attached to prototypes, and (Cobreros et al., 2012), where overlap is described in terms of equisimilarity. For a more extended discussion pertaining to Raffman's own experiments concerning *hysteresis*, see (Egré et al., 2013).

judgments).[5] I can see that a predicate like "not green" would apply to a central red case, so that if "not green" were anchored to that red, no psychologically real similarity space might count "green" as proximate to "not green". But I think that, once appropriate similarity relations are fixed between objects, a symmetry between P and not-P judgments falls out naturally.

6. Supervaluationism and Plurivaluationism

On Raffman's semantics for "tall", a *V-index relative content* determines multiple ranges of application for "tall", corresponding to ranges of admissible heights for "tall". Raffman (section 4.2) insists that ranges of application are unlike supervaluationist precisifications. My sense is that the differences are not all essential, and that there are more shared elements between supervaluationism and Raffman's apparatus than Raffman considers.

Raffman writes that in a range of application, the last element is only a permissible stopping point, not a boundary (I suppose she intends "boundary" to involve some notion of mandatory stopping point). However, supervaluationism is compatible with that view. In my opinion, Raffman could have presented her theory as a way of articulating supervaluationism, rather than as fundamentally different. Fine, for instance, originally distinguished between *actual meaning* ("what helps determine instances and counter-instances") and *potential meaning*, attaching precisifications to the notion of potential meaning. It seems to me one could think of the notion of *V-index relative content* as an articulation of the notion of actual meaning, and of ranges of application as the potential meaning. Secondly, Raffman writes that "an admissible precisification can contain "gappy" items", unlike ranges of application. This is correct, but precisifications can also be defined in a way that does not incorporate any element of semantic partiality: such an approach corresponds exactly to what Smith calls the *plurivaluationist* interpretation of supervaluationism, which "countenances only classical interpretations" ((Smith, 2008), pg. 94).

As a plurivaluationist, Raffman relativizes truth to ranges of application, and so does not endorse the notion of super-truth. Relatedly, she defines validity (on pg. 120) in a way that corresponds to *local validity* (the relevant counterpart to local truth). Unlike standard supervaluationism, a virtue of plurivaluationism is that it retains a compositional notion of truth, and moreover all classical schemata ought to hold of the vague vocabulary, including for multiconclusion arguments – in support of Raffman's point that preservation of classical logic does not commit one to epistemicism. A weakness of plurivaluationism, however, is that it fails to explain one's reluctance to assert of a borderline case of tallness either that it is "tall" or that it is "not tall".[6] Raffman's variety of plurivaluationism can explain half of this reluctance, but it implies that one should less easily say of a borderline

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[5]See also (Egré et al., 2013), where we found that the way in which participants assent to sentences of the form "the square is both yellow and not yellow" does not significantly differ from the way they assent to "the square is both yellow and orange". The data square with Raffman's treatment of borderline cases as falling between proximate categories, but remain consistent with a symmetric view of borderline cases with regard to negation.

[6]I don't mean to ascribe that weakness to Smith's "fuzzy plurivaluationism", but only to the basic form Smith presents in his book.

case of tallness that it is "tall" than it is "not tall", since "borderline tall" entails "not tall" on her account.

This leads us back to the issue whether borderline cases ought to be treated symmetrically or nonsymmetrically with regard to negation. If the asymmetry postulated by Raffman is empirically supported, this would be important evidence for her account. If it isn't, as I suspect might happen, then this might be a reason to think vagueness remains more of a challenge to classical logic.

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