Just as a scale widener with maximum-standard adjectives: emphatic / precisifying effects[1]

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Abstract. In this paper, we propose a finer-grained classification of adjectives labeled Maximum Standard Adjectives (MSAs) in order to account for two of their properties in interaction with the particle *just*. First is the failure of non-extreme MSAs (*clean*, *closed* etc.) to be interpreted emphatically with *just* – in contrast to MSAs like *perfect* (Beltrama, 2021). The second property has to do with the non-uniform availability of a precisifying reading for MSAs in combination with focused *just*. While we assume (like Rotstein and Winter, 2004 and Lassiter and Goodman, 2013) that threshold values for MSAs are uniformly provided by the context, we show that MSAs also vary with respect to how these thresholds are sourced from the context. The non-uniform behavior of MSAs with *just* in its emphatic and precisifying uses is shown to derive from this variability.

Keywords: adjectives, gradability, precisification, intensification, vagueness.

1. Introduction

In combination with adjectives that have been classified as maximum standard adjectives (henceforth MSAs; see Kennedy and McNally, 2005), English *just* exhibits two uses. (1a) exemplifies what has been labeled the <u>emphatic</u> use (see Beltrama, 2021). Informally, the use of *just* here conveys that the subject referent has the adjectival property (perfection, pristineness, etc.) to the highest level possible relative to the context. This emphatic use is observed not only with MSAs, but with a wider range of predicates that have been classified at least since Morzycki (2012) as extreme predicates (e.g. *amazing, gigantic, gorgeous*). Moreover, not all MSAs sound felicitous with *just* on its emphatic use, as shown in (1b).

(1)   a.   This room is <u>just</u> **perfect/pristine/jam-packed**!
          b.   #This room is <u>just</u> **clean/safe/empty/full**!

The second use is what we call the <u>precisifying</u> use. In these cases, *just* combines with MSAs and gives rise to an effect that is (roughly) paraphraseable as *barely* or *exactly*, as shown in (2).

(2)   (About an irrigation system) A pressure switch at the pump outlet [...] would have to be a precisely adjustable one to pump until the tank is **just** full and then shut off.[2]

Any account of these two uses of *just* must be able to (a) explain why some (but not all) MSAs are acceptable on the emphatic use; and (b) delineate the contexts in which precisifying uses of *just* arise with MSAs. In this paper, we offer such an account. To do so, we develop a fine-grained classification of the thresholds of MSAs, and then we propose a unified analysis of the uses of *just* with MSAs, which explains both the non-uniform profile of these adjectives in

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[2]`https://permies.com/t/213913/simple-pumping`

emphatic uses—the data in (1)—and accounts for the precisifying effect of *just* in the contexts where it occurs.

We begin by discussing previous research on the interaction of *just* with MSAs in §2. We examine the behavior of the emphatic and precisifying uses in detail in §3 and then our analysis of them in §4 before concluding in §5.

2. Background

The emphatic use is well known to arise with "extreme" adjectives (or EAs) — adjectives restricted to the upper end of the scale that they are associated with. These adjectives (e.g. *amazing, enormous*) combine readily with modifiers such as *simply* or *downright*, which Morzycki (2012) calls "extreme degree modifiers". Some examples are shown in (3). Note that the focus-bearing expression in such sentences is typically the predicate.

(3)   a.   The food was **just**(/simply/downright) [amazing]$_F$!
       b.   The mountains are **just**(/simply/downright) [breathtaking]$_F$!
       c.   The Empire State Building is **just**(/simply/downright) [enormous]$_F$!

Morzycki (2012) proposes that the meaning of an EA involves a "zone of indifference". According to him, the speaker has a set C of degrees that they believe to be reasonable degrees to consider as the underlying scale for the EA in the context. The zone of indifference lies beyond C, that is, the speaker takes it to be "off the scale". All degrees in the zone of indifference are taken to be equal to the maximum contextually relevant degree **max**(C), so speakers are *indifferent* to distinctions between those degrees.

For example, (4) conveys that the soup's degree of tastiness is so high that it does not register on the contextually relevant scale. The scale associated with *amazing* in (3) is upper-open (there is no maximal degree of tastiness), but there is, nonetheless, a degree **max**(C) which the speaker considers to be the maximal degree that could be relevant to a conversation about the tastiness of the soup. (4) conveys that the tastiness of the soup exceeds that degree.

(4)   This soup is amazing!

The extreme adjectives that Morzycki (2012)'s analysis considers are similar to those in (3), i.e. open-scale adjectives (there is no maximal degree of amazingness, breathtakingness, or enormity). However, Beltrama (2021) examines the emphatic use of *just* with *perfect* (shown in (5a)), a maximum standard adjective (MSA) that is said to involve an upper-closed scale. According to Kennedy and McNally (2005), MSAs convey that their arguments possess a maximal degree of the property in question. The threshold of an MSA is often taken to be the upper endpoint of the scale and thus not context dependent.[3] Thus the fact that the use of the bare positive form of the adjective in a sentence like *The essay is perfect* conveys that the essay possesses perfection to the maximal degree, is evidence that *perfect* is an MSA. The entailment pattern in (5b) corroborates this.

(5)   a.   The essay is **just**(/simply/downright) [perfect]$_F$!

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[3]But Rotstein and Winter (2004), McNally (2011), and Lassiter and Goodman (2013) (among others) have noted challenges to this assumption. We will revisit these challenges in §3.2.

    b.   The essay is perfect.
        → The essay is completely perfect.

There are in fact many maximum-standard adjectives that give rise to emphatic readings with *just*, and those that do also combine with extreme degree modifiers like *downright* and *simply*, indicating that they are also classifiable as extreme adjectives. The adjectives in (6) provide some examples with the entailment patterns in (7) supporting their status as MSAs.

(6)   a.   The train is **just**(/simply/downright) [jam-packed]$_F$!
      b.   The floor is **just**(/simply/downright) [pristine]$_F$!
      c.   The office is **just**(/simply/downright) [deserted]$_F$!

(7)   a.   The train is jam-packed.
          → The train is completely jam-packed.
      b.   The floor is pristine.
          → The floor is completely pristine.
      c.   The office is deserted.
          → The office is completely deserted.

Beltrama (2021) offers a precisification-based analysis of emphatic *just* in which the function of *just* is to exclude less precise construals of the endpoint-denoting predicate it combines with. He claims that a sentence containing an extreme predicate, for example, *The essay is perfect*, can be asserted in a context in which the essay is not, strictly speaking, perfect, but nonetheless approximates perfection very closely. On his analysis, *just* conveys that the prejacent is the finest-grained description of the state of affairs under consideration that is "assertion-worthy". In the spirit of prior analyses of *just* that focus on its use as an exclusive ruling out truth-conditionally stronger alternatives, Beltrama takes emphatic *just* to rule out finer-grained descriptions of the property attribution. Thus *The essay is just perfect* rules out more fine-grained descriptions such as *The essay is basically perfect* (which would convey that the essay merely approximates and does not reach perfection), and thereby conveys that the essay is perfect at the highest level of precision.

(8)   The essay is **just** perfect.
      ⤳ *The essay is basically perfect* is not assertable.

3. Data

3.1. The emphatic use

Nothing in the analysis that Beltrama (2021) provides for emphatic uses of *just* with end-point denoting adjectives predicts that this effect is restricted in any way. In principle, all endpoint-denoting adjectives—not just extreme ones—should combine with *just* and give rise to the emphatic effect. After all, such predicates can be precisified by *absolutely* and *completely* (Sauerland and Stateva, 2007), as shown in (9). We therefore take Beltrama's analysis to predict that *just* should also have an emphatic effect in combination with non-extreme MSAs. To the contrary, however, no emphatic effect arises with these adjectives, as shown in (10).

(9)   a. The door is **absolutely/completely** closed.
        b. This glass is **absolutely/completely** full.
        c. This room is **absolutely/completely** clean.

(10)   a. #The door is **just** closed!
        b. #This glass is **just** full!
        c. #This room is **just** clean!

Furthermore, we do not share Beltrama's intuition that *The essay is perfect* can felicitously be uttered in a context where the speaker believes that the essay merely approximates perfection. More generally, it appears that extreme predicates can **never** be used imprecisely. Evidence for this is the fact that such predicates fail to combine felicitously with *roughly speaking* (also *sorta*), as shown in (11). In this regard, they contrast with the canonical maximum-standard adjectives shown in (12), which other authors have also reported can be used imprecisely (see Kennedy and McNally, 2005; Sauerland and Stateva, 2007). We take this to indicate that the emphatic effect that *just* has in combination with *perfect* is not the result of precisification in context.

(11)   a. #Roughly speaking, this soup is amazing.
        b. #Roughly speaking, the Empire State Building is enormous.
        c. #Roughly speaking, this essay is perfect.
        d. #Roughly speaking, this train is jam-packed.
        e. #Roughly speaking, this hotel room is pristine.

(12)   a. Roughly speaking, this tank is full.
        b. Roughly speaking, this theater is empty.
        c. Roughly speaking, this shirt is dry.

3.2. The precisifying use

Kennedy and McNally (2005) and Kennedy (2007), among others, claim that the threshold of any maximum-standard adjective is a scale endpoint—that is, for any individual *x* and MSA *G*, *x is G* conveys that the property denoted by *G* holds of *x* to the highest degree on the scale. Other authors have challenged this claim. Rotstein and Winter (2004), for instance, argue that thresholds of MSAs are in fact context-dependent and therefore not always located at scale endpoints. For example, they point out that clean objects can have different degrees of cleanliness, as demonstrated by the felicity of (13), which indicates that the threshold of the MSA *clean* in (13) is not the maximal degree of cleanliness.

(13)   Both towels are clean but the red towel is cleaner than the blue one.

McNally (2011) points out that the threshold of *full* for a wine glass is not a scale endpoint, either: A wine glass is usually considered full when roughly half of its volume is occupied. Lassiter and Goodman (2013) use the Rational Speech Act (RSA) framework to model how listeners infer adjective thresholds. According to them, scale structure never determines threshold; rather, thresholds emerge from an interaction between scale structure and listeners' prior beliefs. In view of the observations of all these authors, we assume that all threshold values of

MSAs are supplied by context and are not necessarily scale endpoints.

Given this assumption that threshold values for MSAs are uniformly provided by the context, we observe that there are different ways in which these thresholds might be sourced from the context. Specifically, whether the contextually provided threshold value θ is determinate and whether θ is a scale endpoint may vary across contexts. It turns out that the availability of the precisifying reading for a given MSA combining with *just* depends on these two properties. Since scale endpoints are always determinate values, there are three types of cases to consider:[4]

1. θ is a determinate non-endpoint degree

2. θ is an indeterminate degree

3. θ is an endpoint degree

When we consider MSA-*just* interactions, we see that focused *just* has a precisifying effect in case 1 (§3.2.1), but not in cases 2 (§3.2.2) or 3 (§3.2.3). Before we discuss each case, note that the precisifying reading with *just* is most salient when *just* is prosodically focused. In what follows, we assume that *just* bears focus and ignore any readings that may arise if focus is placed elsewhere.

3.2.1. Case 1: Determinate non-endpoint context-determined θ

Consider (14), in which the context provides a determinate (that is, non-vague) threshold θ: the top of the tank. At first glance, this threshold is felt to be a scale endpoint. However, on closer examination, we see that it cannot be a lexically encoded endpoint because the use of *just* places an upper bound on the threshold, implying the existence of higher degrees. This upper-bounding effect is demonstrated by the contrast between (15a) and (15b).

(14)   (Forum discussion about an irrigation system) A pressure switch at the pump outlet would roughly work, though it would have to be a precisely adjustable one to pump until the tank is **just** full and then shut off.[5]

(15)   a.   The tank is <u>full</u>. In fact, it's overflowing.
        b.   The tank is **just** <u>full</u>. #In fact, it's overflowing.

(16) and (17) provide more examples of the precisifying, upper-bounding effect of *just* when the context provides this kind of threshold to the MSA. In (16a), the point at which a heater valve is "just closed" is contrasted with the point at which it is fully closed. This makes it clear that for such valves, the threshold of *closed* is lower than the scale endpoint. A valve is "just closed" when its degree of closure meets, but does not exceed, this threshold—as demonstrated by (16b). Similarly, in (17a), *just set* makes reference to the minimal degree of firmness that qualifies as set—that is, the custards are to be removed from the oven as soon as they are set, before they become any firmer.

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[4]To be clear, we assume that threshold values are not lexically determined—that is, the same adjective might be construed with a determinate non-endpoint threshold in some contexts, an indeterminate threshold in other contexts, and an endpoint threshold in yet other contexts.

[5]`https://permies.com/t/213913/simple-pumping`

(16) a. (Forum discussion about replacing heater control valves in cars) My advice [...] is to find the point at which the valve is **just** <u>closed</u>. Mark that and that is the point the valve should be at when the heater control is set to the fully closed stop. So, set the control to fully closed and set the valve to the "just closed" position before tightening the cable's trunnion.[6]

  b. The valve is **just** <u>closed</u>. #In fact, it's fully closed.

(17) a. (In a custard recipe) Pour boiling water into the pan to reach halfway up the sides of the ramekins. Bake in oven until the custards are **just** <u>set</u>.[7]

  b. The custards are **just** <u>set</u>. #In fact, they're completely solid.

The upper-bounding effect distinguishes the precisifying use from the emphatic use, as the emphatic use never exhibits it. That is, there is no food that is too tasty to be described as *just amazing*, no mountains that are too beautiful to be described as *just breathtaking*, and no buildings that are too large to be described as *just enormous*. But as we saw, there can be valves that are too closed to be described as *just closed* and custards that are too set to be described as *just set*.

3.2.2. Case 2: Indeterminate context-determined θ

In this case, the context provides an indeterminate non-endpoint threshold value. In (18a), for example, the threshold for *clean* is arguably not an endpoint—as shown by *but not completely*. The context provides no other salient, determinate degree that could serve as θ, which suggests that *clean* has an indeterminate (i.e. vague) threshold. A precisifying reading with prosodically focused *just* is unavailable here, as shown in (18b).

(18) a. (Hotel review) Rooms were <u>clean</u> **but not completely** and the breakfast very basic.[8]

  b. #This hotel room is [**just**]$_F$ <u>clean</u>.

Without a salient, determinate non-endpoint value on that scale, the threshold is indeterminate. Evidence for this is the fact that *clean* gives rise to the Sorites paradox: If one adds grains of dirt to a hotel room one at a time, there is no clear point at which the room transitions from being clean to being unclean.

Note that the type of threshold is provided by the context and not lexically associated with a particular MSA. So, an adjective like *full*, which might be interpreted with determinate, context-determined threshold in some cases, may also be interpreted with an indeterminate threshold in other contexts. As McNally (2011) points out, the standard of fullness for a wine glass is usually far below the rim of the glass and therefore not at the scale endpoint. Such a threshold is vague, as it gives rise to the Sorites paradox: If a wine glass is full, then it is still full if a

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[6] https://www.mgexp.com/forum/mgb-and-gt-forum.1/heater-valve-gasket.3828111/
[7] https://www.taste.com.au/entertaining/articles/how-to-make-perfect-custard/dkghsooa?nk=9fd11850d4a0e42a1c594dd95eff2eb5-1693323721
[8] https://www.tripadvisor.com/ShowUserReviews-g190388-d315211-r406407975-Lovers_Nest_Hotel_Apts-Polis_Paphos_District.html

single drop of wine is removed.[9] *Just full* cannot mean *full to exactly the minimum degree that counts as full for a wine glass* in (19), unless that degree has been precisely specified, such as by a fill-line on the side of the glass.

(19)   #The wine glass is [**just**]$_F$ <u>full</u>.

The naturally-occurring examples shown in (20a)–(23a) further demonstrate that adjectives that have been classified as MSAs can have indeterminate non-endpoint thresholds in some contexts. In each case, the claim that the adjective's threshold is not an endpoint is evidenced by the fact that the adjective is followed by *but not completely*. As in (18), focused *just* cannot be combined with these adjectives when they have the thresholds provided by these contexts.

(20)   a.   [The black water tank of my RV] was overfilled accidentally year 1 before I realized the sink flows into the black as well [...] In any event, if you drain when it gurgles it will be <u>full</u> but NOT completely full and you wont have to worry again.[10]

         b.   #After draining somewhat, the black water tank was [**just**]$_F$ <u>full</u>.

(21)   a.   The relationship clients have with their promotional agencies has been described as being like a toilet window: <u>clear</u> but not completely transparent.[11]

         b.   #Toilet windows are [**just**]$_F$ <u>clear</u>.

(22)   a.   I know for a fact that I love getting salad on a pizza. It allows you to pack whatever lettuce and toppings you want. Some just want to be <u>healthy</u>, but not completely. Just because salad is involved, doesn't mean it is healthy with dough just below it.[12]

         b.   #Some people want to be [**just**]$_F$ <u>healthy</u>.

(23)   a.   There are situations when you might feel <u>safe</u>, but not completely safe. Having someone else with you, including a boyfriend, might help reach that feeling of complete safety.[13]

         b.   #There are situations where you feel [**just**]$_F$ <u>safe</u>.

3.2.3. Case 3: Context-determined endpoint θ

In this case, the context provides a determinate endpoint threshold value. In (24a), for example, the threshold for *pure* is the maximum degree of purity, and so *but not completely* is infelicitous as a follow-up. The scale of purity differs from the scale of fullness in (14) in that it cannot extend *beyond* the threshold of *pure*. As in Case 2, precisification by focused *just* is also infelicitous here, as shown in (24b).

(24)   a.   This H_2O_2 is <u>pure</u>, #but not completely.

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[9] McNally (2011) actually claims that the standard of fullness for a wine glass is not subject to the Sorites paradox and therefore is not vague, but we do not see why that should be the case.

[10] https://www.keystoneforums.com/forums/showthread.php?t=49309

[11] https://www.marketingweek.com/a-case-of-quid-pro-quo/

[12] https://spoonuniversity.com/place/10-reasons-why-mod-pizza-is-worth-the-hype

[13] https://www.quora.com/Is-it-safer-to-have-a-boyfriend-than-not

b. #This H_2O_2 is [**just**]$_F$ <u>pure</u>.

Certain similarly has an endpoint threshold in (25) and also fails to combine with focused *just*.

(25) a. John is <u>certain</u> that it will rain tomorrow, #but not completely.
      b. #John is [**just**]$_F$ <u>certain</u> that it will rain tomorrow.

3.2.4. Upshot

There are two puzzles that the empirical data discussed in this section present. The first puzzle has to do with the failure of non-extreme MSAs (*clean, closed* etc.) to be interpreted emphatically with *just*. Beltrama's (2021) analysis of the emphatic use of *just* assumes that this use is an effect of precisification of the endpoint standard associated with an MSA. This wrongly predicts that all MSAs (including non-extreme ones) should be able to combine with *just*, giving rise to the emphatic effect. The second puzzle, not noted before in the literature as far as we know, has to do with the non-uniform availability of a precisifying reading for MSAs in combination with focused *just*: Why should this reading only be available in contexts that supply a determinate non-endpoint threshold (case 1)?

4. Analysis

4.1. Preliminaries

4.1.1. Scale granularity

Sentences containing certain kinds of vague expressions are construable at different levels of precision and this construal is context-dependent. At least since Krifka (2007), many researchers have conceptualized levels of precision as related to scale granularities. This notion has been deployed in analyses of (non-)round numerals (Krifka, 2007), approximators (Sauerland and Stateva, 2011), degree modifiers (Sassoon and Zevakhina, 2012), and the interaction of *just* with equative and comparative constructions (Thomas and Deo, 2020).

On this approach, a scale is divided into grains of a fixed width where degrees within each grain are indistinguishable from one another. A finer scale granularity corresponds to a smaller grain size and a higher level of precision, while a coarser scale granularity corresponds to a larger grain size and lower level of precision. Grain size is taken to represent the smallest measurement that is relevant in the discourse context.[14]

We follow Sauerland and Stateva (2007) in assuming that any sentence that is construable at different levels of precision is interpreted with respect to a *granularity function* that specifies how precisely the sentence is to be interpreted. We let each context c provide a set of granularity functions $gran_c$, and for any given utterance, an appropriate member of $gran_c$ is chosen

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[14]For example, in a context where height differences of less than one foot are irrelevant, all measurements are rounded to the nearest foot, so *one foot* refers to heights between 0.5 feet and 1.5 feet, *two feet* refers to heights between 1.5 and 2.5 feet, etc. This corresponds to a granular scale with a grain size of one foot.

corresponding to the level of precision intended by the speaker at that context. A granularity function is taken to be a function from points to sets of points that defines a partition on its domain in the manner specified in (26). We refer to the cells of a partition defined by a granularity function as *grains*.

(26)   A granularity function γ maps each point p in a set S of points (on a scale, in space, or in time) to a cell I of a partition of S such that $p \in I$.

Granularity functions can be ordered with respect to their *fineness*. Intuitively, a granularity function γ_1 is finer than a granularity function γ_2 if the grains of γ_1 are smaller than those of γ_2. To keep things simple, we only consider granularity functions whose domain is a one-dimensional scale and assume that all grains of a given granularity function are the same size.

(27)   Given two granularity functions γ_1 and γ_2 with grain widths ε_1 and ε_2, respectively, γ_1 is finer than γ_2 if and only if $\varepsilon_1 < \varepsilon_2$.

Let d be the semantic type of degrees. Any expression δ of type d has a strict interpretation $[\![\delta]\!]^0$. For example, the strict interpretation of *six feet* is the exact point of six feet on a scale of distance. In context, however, point-denoting expressions do not receive their strict interpretation, but rather a "looser" interpretation that depends on a granularity function. In particular, the interpretation with respect to a granularity function γ of any expression δ, whose strict denotation is a point x, is that cell of the partition defined by γ that contains x. δ is interpreted by applying γ to its strict denotation, as given in (28).[15]

(28)   Given a granularity function γ and an expression δ such that $[\![\delta]\!]^0 = x$ for some $x \in D_d$, the interpretation of δ with respect to γ is notated $[\![\delta]\!]_\gamma$ and is defined to be $\gamma(x)$.

4.1.2. Gradable adjectives

A gradable adjective G is standardly taken to denote the function that takes a degree d and an individual x and returns true if the property associated with G holds of x to degree d (see Kennedy and McNally, 2005; and many others). Since we take degree expressions to denote intervals rather than individual degrees, we assume that a gradable adjective denotes a function that takes an interval I and an individual x and returns true if the degree to which the relevent property holds of x lies in I. This is given in (29). The derivation of the meaning of *Mary is six feet tall* relative to γ_{1in} is shown in (30).

(29)   For any gradable adjective G encoding a property associated with a measure function m_G, $[\![G]\!] = \lambda I_{\langle d,t \rangle} \lambda x_e \lambda w.\, m_G(x)(w) \in I$.

(30) $[\![\text{Mary is six feet tall.}]\!]_{\gamma_{1in}}$
        $= \lambda w. [\![\text{tall}]\!]([\![\text{six feet}]\!]_{\gamma_{1in}})(\mathbf{m})(w)$

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[15] As an illustrative example, consider the interpretation of the measure phrase *six feet* with respect to the granularity function γ_{1in} that rounds every value on the scale of heights S_{height} to the nearest inch, producing the following partition:

(i) $\{[0'', 0.5''), [0.5'', 1.5''), [1.5'', 2.5''), ..., [5'11.5'', 6'0.5''), ...\}$

Since the strict interpretation $[\![\text{six feet}]\!]^0$ lies in the cell $[5'11.5'', 6'0.5'')$, we have $[\![\text{six feet}]\!]_{\gamma_{1in}} = \gamma_{1in}([\![\text{six feet}]\!]) = [5'11.5'', 6'0.5'')$. In other words, *six feet* denotes the interval from $5'11.5''$ to $6'0.5''$.

$$= \lambda w.\, \textbf{tall}(\textbf{m})(w) \in \llbracket \text{six feet} \rrbracket_{\gamma_{\text{lin}}}$$
$$= \lambda w.\, \textbf{tall}(\textbf{m})(w) \in [5'11.5'', 6'0.5'']$$

Following Kennedy and McNally (2005), we assume that the interpretation of any gradable adjective without an explicit measure phrase involves a silent *POS* morpheme, which sets the adjective's threshold. We assume (contra Kennedy and McNally, 2005) that thresholds are always contextually supplied, even if the scale under consideration is closed. The meaning we adopt for *POS* is shown in (31), where $\sup(\gamma(d))$ is the supremum of $\gamma(d)$ and $\theta_{G,C}$ is the threshold for G supplied by the context C. ($\sup(\gamma(d)) > \theta_{G,C}$ amounts to saying that d either exceeds $\theta_{G,C}$ or is indistinguishable from $\theta_{G,C}$ at granularity level γ.)

(31) $\llbracket POS \rrbracket_\gamma = \lambda G \lambda x \lambda w. \exists d [\sup(\gamma(d)) > \theta_{G,C} \wedge G(\gamma(d))(x)(w)]$

As an illustrative example, the derivation of the meaning of *The tank is full* is shown in (32). According to (32), *The tank is full* in a world w with respect to a granularity function γ if there is a degree d such that the tank's degree of fullness in w lies in $\gamma(d)$ and some degree in $\gamma(d)$ exceeds the contextually-provided threshold.

(32) $\llbracket \text{The tank is full} \rrbracket_\gamma$
$= \lambda w. \llbracket POS \rrbracket_\gamma (\llbracket \text{full} \rrbracket)(\llbracket \text{the tank} \rrbracket)(w)$
$= \lambda w. \exists d [\sup(\gamma(d)) > \theta_{\text{full},C} \wedge \llbracket \text{full} \rrbracket(\gamma(d))(\iota(\textbf{tank}))(w)]$
$= \lambda w. \exists d [\sup(\gamma(d)) > \theta_{\text{full},C} \wedge \textbf{full}(\iota(\textbf{tank}))(w) \in \gamma(d)]$

4.1.3. Extreme adjectives

We adopt Morzycki's (2012) analysis of open-scale extreme adjectives and extend it to extreme MSAs such as *jam-packed*, which were discussed in §3.1. The scale of fullness which *full* and *jam-packed* make reference to in (33) has an objective endpoint: the degree of fullness such that passengers' bodies occupy literally every bit of space in the train. This is ordinarily not the threshold for *full*, as (33a) typically expresses that every seat in the train is occupied. The true endpoint of the scale is rarely relevant in ordinary conversation, so there is a contextually relevant set C of degrees whose maximum value $\textbf{max}(C)$ is the maximum degree of fullness that the speaker can reasonably imagine a train to have. The degrees above it constitute a zone of indifference. (33b) conveys that the train's degree of fullness lies within this zone of indifference, which might be the case if passengers are standing in the train's aisles and exit spaces because there are not enough seats for them.

(33)   a.   This train is full.
      b.   This train is jam-packed!

Crucially for our analysis, $\textbf{max}(C)$ is subjective and may vary from speaker to speaker. A speaker who has only ridden Amtrak trains in the United States, for instance, may have a lower $\textbf{max}(C)$ than a speaker who has ridden the much more crowded trains of India or Japan. Speakers can faultlessly disagree about the value of $\textbf{max}(C)$, as shown in (34). Therefore, even if a scale has an objective endpoint, $\textbf{max}(C)$ may vary because it is subjective.

(34)   A: This train is jam-packed!
      B: I don't think so. I've seen way more crowded trains in Japan.

It is worth noting that some adjectives seem to have both subjective and objective uses. One such adjective is *perfect*. In the sentences in (35), *perfect* has an objective endpoint threshold and is roughly synonymous with *without flaws*: (35a) conveys that John's score was exactly 100%, and (35b) conveys that the shape Mary drew had exactly the shape of a circle. Consistent with the observations in §3.1, we find that the emphatic use of *just* does not occur with *perfect* when it has an objective threshold.

(35) a. John's score on the exam was **(#just)** <u>perfect</u>.
      b. The circle that Mary drew was **(#just)** <u>perfect</u>.

The cases where *perfect* does give rise to an emphatic reading with *just* seem to actually involve open scales. For example, (36) seems to us to mean something stronger than *The essay has no flaws*: It conveys that the essay's degree of quality exceeds the speaker's $\mathbf{max}(C)$. This is not necessarily true of any essay that has no flaws. For instance, if two essays are both objectively flawless (that is, they contain no spelling errors, no factual inaccuracies, etc.), one might still be judged better than the other if it is subjectively more interesting or more enjoyable to read. The lower-quality essay then cannot be described as perfect even though it has no flaws. $\mathbf{max}(C)$ is the degree of essay quality that the speaker takes to be the highest degree under consideration, but the scale of essay quality does not actually have an upper endpoint. Therefore, although the objective uses of *perfect* in (35) involve an upper-closed scale, we take the uses of *perfect* that Beltrama (2021) considers to be subjective and involve an *upper-open* scale.

(36) The essay is **just** <u>perfect</u>.   (repeated from (5))

One further example of an adjective with both subjective and objective uses is *wrong*. Its objective use is exemplified in (37a), and its subjective use is exemplified in (37b). On it objective interpretation, *wrong* means *factually incorrect* and does not combine with emphatic *just*. On its subjective interpretation, *wrong* is an extreme adjective that means something like *morally reprehensible*, so (37b) conveys that stealing candy from children is immoral to a degree beyond the speaker's $\mathbf{max}(C)$.

(37) a. John's answer to the multiplication problem was **(#just)** <u>wrong</u>!
      b. Stealing candy from children is **just** <u>wrong</u>!

4.2. Proposal

To unify the emphatic and precisifying uses of *just*, we propose that when *just* combines with a gradable adjective, it conveys that the scale (i.e. the set of degrees) under consideration is as wide as possible at the context. Unifying these uses depends on coming up with an appropriate definition of "wideness". On our analysis, precisifying *just* widens the scale by making it more granular, while emphatic *just* widens it by raising $\mathbf{max}(C)$. The **wideness relation** on scales is given in (38).

(38) For any scales S_1 and S_2, $S_1 \sqsupset_w S_2$ if and only if
      a. $\forall d \in S_2 : \nexists d' \in S_1 : d \subset d'$ (No degree of S_2 is properly contained in any degree of S_1.)
      b. $\exists d \in S_1 : \exists d' \in S_2 : d \subset d'$ (Some degree of S_1 is properly contained in a degree of S_2.)

For any gradable adjective G, we assume the context makes available a set of scales $\mathbb{S}_G$ that G

could associate with. The widest member of such a set can then be defined as in (39).

(39)   For any set of scales $\mathbb{S}$, S is the **widest** scale in $\mathbb{S}$ iff there is no other scale in $\mathbb{S}$ wider than S.

The proposed contribution of precisfiying/emphatic *just* can then be stated as follows:

(40)   For any gradable adjective G, *just G* requires that the scale associated with G is the widest scale in $\mathbb{S}_G$.

4.3. Application

4.3.1. Extreme MSAs: The emphatic use

In §3.1, we observed that extreme MSAs do not allow for imprecise uses (*pace* Beltrama, 2021), as demonstrated by (11), repeated in (41). In view of that observation, we take the members of $\mathbb{S}_G$ for an extreme adjective not to vary with respect to granularity.

(41)   a. #Roughly speaking, this train is jam-packed.
        b. #Roughly speaking, this hotel room is pristine.
        c. #Roughly speaking, this essay is perfect.

They do, however, vary with respect to the value of $\mathbf{max}(C)$ because, as pointed out in §4.1.3, they allow for faultless disagreements about what counts as *pristine, jam-packed, perfect* etc. We model this by keeping the granularity across all scales in $\mathbb{S}_G$ at γ_{finest} while allowing $\mathbf{max}(C)$ to vary. Wider members of $\mathbb{S}_G$ in this case are scales with higher values of $\mathbf{max}(C)$, so *just* conveys that the speaker is using the highest value of $\mathbf{max}(C)$ they can conceive of, which prompts the addressee to consider wider scales than they may have otherwise. To see why, consider the two members of $\mathbb{S}_{\text{full}}$ shown in Figure 1. The scales are partitioned into the degrees specified by γ_{finest}, but the degrees higher than $\mathbf{max}(C)$ are collapsed into a single degree, the zone of indifference (shown as a dashed line). The upper scale in the figure has a lower value of $\mathbf{max}(C)$, so its zone of indifference properly contains some scale degrees that are distinguished by the other scale—namely *very full* and *jam-packed*. The scale with the higher $\mathbf{max}(C)$ is therefore wider, according to (38).
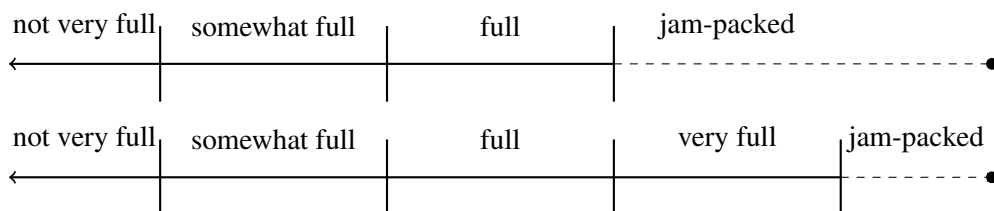

Figure 1: Two members of $\mathbb{S}_{\text{full}}$. The dashed portion of the scale is the zone of indifference.

For any extreme adjective G, the widest member of $\mathbb{S}_G$ is the one whose $\mathbf{max}(C)$ is as high as the speaker can imagine. It follows that in (42) (repeated from (6)), *just* conveys that the speaker believes they are using the highest conceivable value of $\mathbf{max}(C)$. This prompts the

hearer to consider higher scale degrees than they may have otherwise taken to be relevant. This maximization of **max**(C), we claim, is the source of the emphatic effect.

(42)   a.   The train is **just** [jam-packed]$_F$!
          b.   The floor is **just** [pristine]$_F$!
          c.   The office is **just** [deserted]$_F$!

We focus on upper-closed scales here, but this analysis applies just as well to open-scale extreme adjectives and can be extended beyond adjectives to other kinds of extreme predicates. See Deo and Thomas (forthcoming) for details.

The emphatic effect with *just*, on this analysis, is the result of an upward manipulation of the zone of indifference, and therefore, it cannot arise with adjectives that do not lexically make reference to a zone of indifference. It follows that only extreme adjectives (based on upper-closed or upper-open scales) can combine with *just* to give rise to the emphatic effect. The failure of non-extreme MSAs (*clean, closed* etc.) to be interpreted emphatically with *just* is thus accounted for – they make no reference to a zone of indifference.

4.3.2. Non-extreme MSAs: Case 1—the precisifying use

When non-extreme MSAs (such as *full*) are interpreted with determinate non-endpoint thresholds, the scales in $\mathbb{S}_D$ vary by granularity level. The widest scale in such cases is the one corresponding to γ_{finest}. To see why, consider Figure 2. The upper scale has a coarser granularity than the lower one. No degree of the finer scale is properly contained in any degree of the lower one, satisfying (38a). At the same time, there some degrees of the lower scale are properly contained in degrees of the upper one, satisfying (38b).
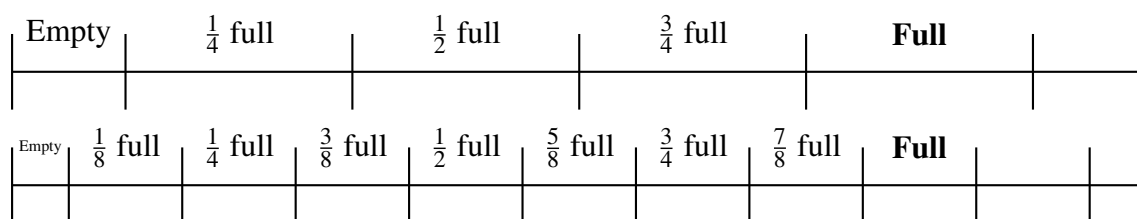

Figure 2: The scale of fullness partitioned according to a coarser granularity function (upper) and a finer granularity function (lower).

Note from (40) that *just G* requires that the scale associated with G is the widest scale in $\mathbb{S}_G$. For (43) (repeated from (15)), this means that the use of *just* leads to the selection of the finest permissible scale granularity for interpretation of the adjective. In other words, *the tank is just full* conveys that the tank's degree of fullness meets the contextually salient threshold (in this case, the fill line) even when measured at the highest permissible degree of precision. This is what *just*'s precisifying effect amounts to.

(43)   a.   The tank is <u>full</u>. In fact, it's overflowing.
          b.   The tank is **just** <u>full</u>. #In fact, it's overflowing.

By itself, however, this mechanism does not account for the upper-bounding effect observed in

(43b): If the tank exceeds the threshold by any amount, including the large amount in (43b), then it qualifies as full at γ_{finest} and therefore at all coarser granularities. Why, then, does *just* have this upper-bounding effect?

We suggest that the upper bounding effect observed in (43) is a special variety of conversational implicature – a mandatory implicature (Lauer, 2014). Unlike canonical conversational implicatures Lauer's mandatory or "Need a Reason" implicatures arise when the class of contexts in which the implicature arises is a superset of the class of contexts in which a given implicature-generating expression is felicitous. Naturally, these are not cancellable inferences. Recall from §3.2 that the precisifying use requires focus on *just*. In such cases, it is reasonable to assume that the the Current Question Under Discussion (see Roberts, 2012) that the declarative answers is a quantity ("How much?") question, as shown in (44). In other words, the class of contexts in which precisifying *just* is felicitous is those in which the QUD is a quantity question.

(44)   CQ: How full is the tank?
        A: The tank is [**just**]$_F$ full.

The fact that the speaker used *just* to select the finest permissible granularity level indicates that the speaker intended to fully answer the question at that granularity level. That means that if the degree of fullness of the tank exceeded the threshold of *full* by any degree that is relevant at γ_{finest}, the speaker would have said so. Thus the hearer infers that the degree of fullness of the tank does not exceed the threshold for *full* by any degree that is relevant at γ_{finest}. This accounts for the upper bound.

It is worth emphasizing that on our analysis, the emphatic and precisifying effects of *just* are distinct phenomena. Whereas Beltrama (2021) takes the emphatic effect to involve a special kind of precisification, we have argued here that the non-uniform behavior of *just* with MSAs calls for a treatment of precisification and extreme degree modification as distinct phenomena. The precisifying use of *just* conveys that the degree to which a predicate holds of an entity is as close as possible to some objective standard—in other words, any "rounding up" that the speaker is doing is negligible. In contrast, the emphatic use conveys that the degree to which the predicate holds of an entity exceeds the highest value that the speaker can conceive of—thereby reducing the amount of "rounding *down*" to the threshold of the zone of indifference.

4.3.3. Non-extreme MSAs: Case 2

Recall from §3.2.2 that the precisifying effect does not arise when *just* combines with an adjective whose contextually supplied threshold is indeterminate, as shown in (45) (repeated from (18a)).

(45)   a.   (Hotel review) Rooms were <u>clean</u> but **not completely** and the breakfast very basic.[16]
        b.   #This hotel room is [**just**]$_F$ <u>clean</u>.

What seems to prevent *clean* from combining with *just* in (45b) is the indeterminacy of its

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[16]https://www.tripadvisor.com/ShowUserReviews-g190388-d315211-r406407975-Lovers_Nest\
_Hotel_Apts-Polis_Paphos_District.html

threshold. In other words, *clean* is vague. In general, precisification is only possible for gradable adjectives whose threshold is taken to be a determinate point on a scale, as the threshold of *full* is when a tank has a visible fill line. Given that precisification involves reducing the amount of uncertainty about the location of a point on a scale, it is simply not possible to precisify to a point that does not have a determinate location.

Therefore, the interpretation of non-extreme MSAs with non-endpoint indeterminate thresholds can only be at low levels of precision. Thus the members of $\mathbb{S}_G$ for such adjectives cannot vary by granularity. Although they may vary by the value of $\mathbf{max}(C)$, the choice between such scales would not affect the interpretation of the adjective since the threshold of a non-extreme adjective does not depend on $\mathbf{max}(C)$. As a result, combination with *just* gives rise to neither a precisifying nor an emphatic effect in this case.

4.3.4. Non-extreme MSAs: Case 3

The last case to consider is *just*'s interaction with non-extreme MSAs whose thresholds are scale endpoints. The value of such a threshold is always determinate and objective. For example, the highest possible degree of purity of H_2O_2 in (46) (repeated from (46)) is an objective fact about the world—not something that interlocutors can faultlessly disagree about. The threshold of *certain* in (47) is also objective: It is the degree of absolute certainty, where doubt is totally absent. In addition, it was noted in §4.1.3 that *perfect* has a use that involves an objective threshold, which is repeated in (48).

(46)   a.   This H_2O_2 is <u>pure</u>, #but not completely.
       b.   #This H_2O_2 is [**just**]$_F$ <u>pure</u>.

(47)   a.   John is <u>certain</u> that it will rain tomorrow, #but not completely.
       b.   #John is [**just**]$_F$ <u>certain</u> that it will rain tomorrow.

(48)   a.   John's score on the exam was <u>perfect</u>, #but not completely.
       b.   #John's score on the exam was [**just**]$_F$ <u>perfect</u>.

In these cases, the objective nature of the endpoint threshold prevents its value from varying between members of $\mathbb{S}_G$. Since our analysis takes the emphatic effect to depend on the subjective nature of $\mathbf{max}(C)$, it correctly predicts the emphatic effect to be absent in this case.

More puzzling is the fact that *just* appears to be unable to effect precisification in (46) and with other adjectives that have objective endpoint thresholds. We leave the explanation of this reading's unavailability to future work. It is possible that there is a competition between *just* and more restricted devices for effecting precisification at the scale endpoint, such as *completely* and *totally*.

5. Conclusion

We have proposed that when it combines with so-called maximum-standard adjectives, *just* uniformly effects a widening of the scale that is chosen for interpretation of the adjective at the

context. In the precisifying use, the scale is widened by making it more granular, while in the emphatic use, the scale is widened by increasing the highest scale degree under consideration at the context. This correctly predicts that the precisifying effect only arises with adjectives that have determinate thresholds. On the other hand, the emphatic effect only arises with extreme adjectives because their thresholds are subjectively variable and depend on what speakers *treat* as the endpoint of a scale. This also accounts for the fact that the same adjective such as *perfect* or *wrong* may or may not give rise to the emphatic effect in combination with *just* depending on whether it is construed subjectively or objectively.

Our analysis offers greater empirical coverage than existing analyses of emphatic *just*, which are unable to account for its non-uniform behavior across the class of MSAs. In this brief discussion, we have only engaged with the precisification-based analysis of the emphatic use that Beltrama (2021) offers, but we note that no other existing analysis (e.g. Warstadt, 2020; Windhearn, 2021) offers an explanation for why *just* gives rise to an emphatic effect with some MSAs in some contexts and a precisifying effect with other MSAs in other contexts. Crucially, there is no MSA whose combination with *just* gives rise to both the emphatic and the precisifying effect in different contexts.

The analysis in Deo and Thomas (forthcoming) is a further generalization of the scale-widening analysis proposed here. The generalization involves the consideration of a set of alternative construals of an underspecified question, and an ordering of this set along a scale of wideness. *Just* is taken to impose a requirement that the widest answerable construal of the underspecified question has been taken up for resolution. The emphatic and precisifying uses (only two among a much wider range of uses for *just*) arise in those contexts where the widest answerable construal is the one that is interpreted with respect to the widest scale.

References

Beltrama, A. (2021). *Just* perfect, *simply* the best: An analysis of emphatic exclusion. *Linguistics and Philosophy 45*, 321–364.

Deo, A. and W. C. Thomas (forthcoming). Addressing the widest answerable question: English "just" as a domain widening strategy. *Journal of Semantics*, under revision.

Kennedy, C. (2007). Vagueness and grammar. *Linguistics and Philosophy 30*, 1–45.

Kennedy, C. and L. McNally (2005). Scale structure, degree modification, and the semantics of gradable predicates. *Language 81*(2), 345–381.

Krifka, M. (2007). Approximate interpretations of number words: A case for strategic communication. In G. Bouma, I. Krämer, and J. Zwarts (Eds.), *Cognitive Foundations of Interpretation*, pp. 111–126. Amsterdam: Royal Netherlands Academy of Arts and Sciences.

Lassiter, D. and N. D. Goodman (2013). Context, scale structure, and statistics in the interpretation of positive-form adjectives. *Semantics and Linguistic Theory (SALT) 23*, 587–610.

Lauer, S. (2014). Mandatory implicature in Gricean pragmatics. In J. Degen, M. Franke, and N. Goodman (Eds.), *Proceedings of Formal and Experimental Pragmatics 2014*, pp. 21–28.

McNally, L. (2011). The relative role of property type and scale structure in explaining the behavior of gradable adjectives. In *International Workshop on Vagueness in Communication 2009*, pp. 151–168.

Morzycki, M. (2012). Adjectival extremeness: Degree modification and contextually restricted scales. *Natural Language & Linguistic Theory 30*(2), 567–609.

Roberts, C. (2012). Information structure in discourse: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics 5*(6), 1–69.

Rotstein, C. and Y. Winter (2004). Total adjectives vs. partial adjectives: Scale structure and higher-order modifiers. *Natural Language Semantics 12*, 259–288.

Sassoon, G. and N. Zevakhina (2012). Granularity shifting: Experimental evidence from degree modifiers. *Semantics and Linguistic Theory (SALT) 22*, 226–246.

Sauerland, U. and P. Stateva (2007). Scalar vs. epistemic vagueness: Evidence from approximators. *Semantics and Linguistic Theory (SALT) 17*, 228–245.

Sauerland, U. and P. Stateva (2011). Two Types of Vagueness. In P. Égré and N. Klinedinst (Eds.), *Vagueness and Language Use*, pp. 121–145. London: Palgrave Macmillan.

Thomas, W. and A. Deo (2020). The interaction of *just* with modified scalar predicates. In M. Franke, N. Kompa, M. Liu, J. L. Mueller, and J. Schwab (Eds.), *Proceedings of Sinn und Bedeutung 24*, pp. 354–372.

Warstadt, A. (2020). "just'" don't ask: Exclusives and potential questions. In M. Franke, N. Kompa, M. Liu, J. L. Mueller, and J. Schwab (Eds.), *Proceedings of Sinn und Bedeutung 24*, Volume 2, pp. 373–390.

Windhearn, J. R. (2021). *Alternatives, Exclusivity, and Underspecification*. Ph. D. thesis, Cornell University, Ithaca.