The Small Improvement Argument, Epistemicism, and Incomparability

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Introduction

Which is more impressive – St Paul's Cathedral or the Eiffel Tower? It seems that neither is more impressive than the other. Are they equally impressive? If they were, then a minute improvement to the impressiveness of St Paul's would make it more impressive than the Eiffel Tower. But a minute improvement does not seem sufficient to shift the balance. So, the two cannot be equally impressive. Therefore, none of the trichotomy of comparative relations 'more impressive than', 'less impressive than' and 'equally impressive' apply between the Eiffel Tower and St Paul's. This is the Small Improvement Argument (SIA).[1]

For some SIAs, our failure to have confidence in any of the components of the trichotomy can be explained by what we might call our 'contingent ignorance' about the properties of the two options, as when there is some fact of the matter that we just haven't yet found out. Others can be explained by our conceptual incompetence, such as when we haven't thought hard enough about the comparative concept in question. However, there are some 'hard cases' which cannot be explained in this manner. The comparison of the Eiffel Tower and St Paul's is arguably one example: even once

[1] The argument was initially introduced in (de Sousa 1974). For a classic discussion and overview of the SIA, see (Chang 1997).

we have all the information and are sufficiently conceptually competent, we may still be unable to conclude that one is more impressive or that they are equally impressive. We, along with a number of other philosophers, believe that these hard cases are borderline cases of vague comparative predicates (Broome 1997). Just as we cannot come to a definitive answer in these hard comparisons, we cannot come to a definitive answer about when a man is bald, even if we know all the facts about the number of hairs on his head and how they are dispersed, and even if we completely understand the concept of baldness. The reason for this, in our view, is that these are both instances of vagueness.

Ruth Chang (2002) has notably rejected this claim. She argues that hard cases (which she calls 'superhard cases') can be distinguished from borderline cases by considering some of the permissible practical responses to the two types of case. We will not engage with that argument here for reasons of space and because our arguments would largely repeat those made elsewhere (Broome 1997; Wasserman 2004; Gustafsson 2013; Williams 2016). Instead, we take it for granted here that the hard cases raised in some SIAs exploit vagueness, and our conclusion is accordingly conditioned on that assumption.

The question that follows is, what is the correct theory of vagueness, and what are its implications for the SIA? Almost all vagueness-based accounts of the SIA have thus far assumed the truth of *supervaluationism*, one leading theory of vagueness. According to supervaluationism, sentences involving borderline cases of vague predicates are neither true nor false. Supervaluationist accounts of the SIA thus say of the above case that it is neither true nor false that the Eiffel Tower is more impressive than St Paul's, nor that it is less impressive, and nor that the two are equally impressive. However, supervaluationism is not universally accepted as a theory of vagueness, and it has some problematic features (Williamson 1994, chap. 5). For example, it implies that a true disjunction can have no true disjuncts. With respect to the SIA set out above, for instance, it says that the disjunction 'St Paul's is either more impressive than, less impressive than, or as impressive as the Eiffel Tower' is true, but that none of the individual disjuncts is true.[2] This seems problematic. Indeed, the natural thing to say in response to such a theory may be that it simply has the wrong account of what 'or' means; we need a theory which is consistent with 'or', and supervaluationism does not fit the bill. Appeals to semantics of this kind command widespread

[2]We explain why this is in section 3.

assent in other domains. For example, the most popular response to the claim that the relation 'better than' is intransitive is simply that this must be wrong, as a semantic matter (Huemer 2013). Thus, supervaluationism's hegemony in debates about the SIA is certainly open to question.[3]

Although this of course does not count as decisive criticism of supervaluationism, it does give us *prima facie* reason to explore viable alternatives to it. One of the leading alternatives to supervaluationism is *epistemicism*. In contrast to supervaluationism, epistemicism holds that borderline propositions have exactly one truth value – true or false – but that we are incurably ignorant of it. Consider the example of a plump man, Jim, who is a borderline case of 'is fat'. The epistemicist denies that it is neither true nor false that Jim is fat. Rather, this proposition has exactly one truth value, but we cannot know what that truth value is.

In the wake of persuasive recent defences of epistemicism and its growing philosophical popularity, epistemicism at least deserves a seat at the table in discussions about vagueness (Sorensen 1988; Williamson 1994).[4] Whether those defences succeed is, of course, a judgment about which reasonable people will differ, but we think it is clear that epistemicism cannot, in view of these defences, simply be ignored.

Yet in spite of epistemicism's large and growing philosophical popularity, an epistemicist account of the SIA has yet to be fully developed in the literature. Our goal here is to fill this gap. We argue that on an epistemicist vagueness-based account of the SIA, items are comparable in small improvement cases. In other words, if epistemicism is true, in small improvement cases, incomparabilists confuse our ignorance of a ranking with the non-existence of a ranking. (Note that our argument only establishes that items are comparable in small improvement cases, and therefore is compatible with the possibility that items are incomparable in other cases not involving vagueness. For example, it might be argued that any amount of profound artistic contemplation is absolutely incomparable with any amount of base pleasure.) This is potentially important for axiology. If epistemicism is true, then the SIA does not show the betterness ordering

[3]This is but one of many criticisms of supervaluationism. For classic texts both critical and in favor of supervaluationism, see (Williamson 1994; Keefe and Smith 1997; Sorensen 2001).

[4]A number of other prominent philosophers endorse epistemicism, including John Hawthorne (Hawthorne and McGonigal 2008), Nicholas Rescher (2009), and Patrick Greenough (2003). Dunaway (2016) has explored the implications of epistemicism for practical reasoning.

to be incomplete in small improvement cases.

Our argument is doubly conditional: *if* all hard cases raised in SIAs are borderline cases of vague predicates, and *if* epistemicism is true, then items are comparable in small improvement cases. We make no attempt to defend either part of the antecedent here. Nonetheless, as we have argued above, there is sufficient reason to explore what follows if both parts of the antecedent are true.

The paper is structured as follows. In Section 2, we define comparability, formalise the SIA, and define borderline cases of vague predicates. In Section 3, we introduce in more depth, and discuss the implications of, supervaluationism and epistemicism for the SIA. Since epistemicism is deductively logically consistent with both comparabilism and incomparabilism about small improvement cases, we develop and discuss versions of both, arguing that we ought to accept epistemic comparabilism. Interestingly, one of the arguments we use also shows that even if hard cases are not borderline cases of vague predicates, if epistemicism is true, then items cannot be on a par. Lastly, we consider the treatment of higher order hard cases by supervaluationism, epistemicism (our preferred theory), and Chang's parity view. We argue that, as things stand in the literature, only the epistemicist view provides a compelling account of how to account for such cases.

Comparability and the Small Improvement Argument

Comparability

How one defines comparability depends upon certain assumptions, and we use a definition with which some philosophers disagree. We believe that what Ruth Chang (2002) has called the 'Trichotomy Thesis' is true, and will take it for granted here. Chang's argument against the Trichotomy Thesis rests in part on the claim that not all SIAs can be explained by contingent ignorance or vagueness. As we have mentioned above, we believe that others have provided decisive criticism of this view.[5]

[5] Elson (2014) provides strong criticism of another crucial part of Chang's argument against the Trichotomy Thesis. In section 3, we show that even if hard cases are not cases of vagueness, if epistemicism is true, then there are very strong reasons to doubt the possibility of parity, and that parity struggles to deal with higher-order hard cases.

Trichotomy Thesis: Two items, x and y, are *comparable* in terms of their Fness, if and only if x is Fer than, less F than, or as F as y.

According to the Trichotomy Thesis, two options are *incomparable* in terms of their Fness if and only if it is not true that x is Fer than, less F than, or as F as y. *Comparabilism* can be understood as the claim that for any two items in F's domain, one of the trichotomy of 'Fer than', 'less F than', or 'as F as' applies between them. *Incomparabilism* is the denial of comparabilism. For instance, a comparabilist about the creativity of artists would claim that, for all pairs of artists, one is either more creative than, less creative than, or as creative as the other. An incomparabilist about the creativity of artists would deny this.

Note that on our definition, it is sufficient for incomparabilism that all of the components of the trichotomy are *not true*. On some logics, propositions can be neither true nor false (Broome 1997). We believe that, *as a semantic matter*, if all of the components of the trichotomy are not true, that is sufficient for incomparability. The claim that it is false that one of the components holds is stronger (given that false implies not true) and so is also sufficient.[6] If all of the components of the trichotomy are not true between a pair of items, then the items are not ordered in terms of their Fness, and it is the ordering of items in terms of Fness that the concept of comparability ought to capture.

One final thing to note about our definition is that it allows that it might be the case that between two comparable items, we do not or cannot know, in a trivial sense, which of the components of the trichotomy is true. Some such cases are straightforward. Suppose we have to discern which of two carrots is longer, but one of them is in a locked safe to which we do not have access. We might ordinarily say "the length of these two carrots is incomparable". However, it is not, on the present understanding of 'incomparable'. It is true that one carrot is longer than the other or that they are equally long. That we cannot measure them does not change this fact. They are, then, in the relevant sense, comparable. We should not confuse incomparability with ignorance about the ranking of options.

[6] Some philosophers argue that borderline propositions are both true and false (Hyde 1997). We bracket these accounts here.

The Small Improvement Argument

We can now set out the Small Improvement Argument. A range of SIAs have been presented in the literature. Consider this version, which we believe makes the case particularly strongly. Suppose that we are comparing a painter, Francis, with a musician, Kate, and that it seems as though it is not true that one is more creative than the other. Now consider Francis+, who is slightly more creative than Francis: suppose that one of his frescos manifests slightly more creativity. If Francis and Kate were exactly equally creative, then Francis+ would be more creative than Kate. However, intuitively it is not true that Francis+ is more creative than Kate, since a small improvement to one of Francis's frescoes could not tip the balance in this way. Therefore, Francis and Kate cannot be equally creative. Therefore, it is not true that Francis is more creative than, less creative than, or as creative as Kate. By the Trichotomy Thesis, Francis and Kate are therefore incomparable in terms of their creativity.

The SIA may be generalised and formalised as follows:

Premises

P1. 'Equally F' is a transitive relation.

P2. For some F, and some options x, $x+$, and y in F's domain:

(a) It is not true that x is Fer than y

(b) It is not true that y is Fer than x.

(c) It is not true that $x+$ is Fer than y.

(d) $x+$ is Fer than x.

P3. If it is not true that x is Fer than or less F than y, and it is not true that x and y are equally F, then x and y are incomparable with respect to F.

Argument

[Suppose for *reductio* that]:

4. x and y are equally F

[From P1, P2 (d) and 4]:

5. $x+$ is Fer than y.

[But this contradicts P2 (c). So]:

6. It is not true that x and y are equally F.

[From P2 (a) and (b) and 6]:

7. It is not true that x is Fer than or less F than y, and it is not true that they are equally F.

[From P3 and 7]:

C. x and y are incomparable with respect to F.

Our target is P2. We argue that, assuming that epistemicism is true, it is not possible for P2 (a), (b), (c) and (d) to be true at the same time. If epistemicism is true, incomparabilists confuse our *ignorance* of the truth of P2 (a), (b) and (c) with the truth of all of P2 (a), (b), (c) and (d).[7]

2.3 Hard cases and borderline cases

In our view, many SIAs which have been presented in the literature involve a significant amount of contingent epistemic limitation, not unlike our example of the locked-away carrots. SIAs which only involve contingent ignorance are uncontroversially unsound because they confuse our merely contingent ignorance of a ranking with the non-existence of a ranking. Similarly, other SIAs exploit poorly understood concepts. It may sometimes be the case, for instance, that two soldiers seem incomparable in terms of their bravery, but only because we do not understand the concept of bravery well enough. However, it is widely believedthat there remain hard cases in which no amount of further empirical checking or conceptual analysis would allow us to determine which of the components of the trichotomy applies. The creativity SIA set out above seems to present an example of such a hard case.

As we have said, we believe that these hard cases are borderline cases of vague predicates. Before we proceed, it is worth being clear about what it means to say that something is a borderline case of a vague predicate. There is disagreement both about the definition of vagueness and of borderlineness. Sensitivity to sufficiently small changes but sensitivity to larger ones ('tolerance'), susceptibility to the sorites paradox, and susceptibility to borderline cases have all been defended as definitive of vagueness, and have

[7]Note that in order to highlight the contrast between epistemicism and supervaluationism, we include the truth predicates in the premises themselves. We explain why we do this in the next section.

also been subject to criticism (Sorensen 1988; Greenough 2003; Bueno and Colyvan 2012). In light of this controversy, we remain neutral on the sufficient conditions for something to be a borderline case of a vague predicate. However, we follow the most popular account of borderlineness by holding that it is a necessary condition of borderline cases of vague predicates that they are *resistant to inquiry* (Williamson 1994, 2; Keefe and Smith 1997; Sorensen 2015).[8] A case is a borderline case only if we cannot determine whether a predicate applies or does not apply by reducing our contingent ignorance or by improving our conceptual competence.

Vagueness and Ignorance

We will now briefly review the implications of supervaluationism for the SIA before moving on to consider the implications of epistemicism.

Supervaluationism

Before beginning, we should make clear that what follows is simply a discussion, rather than a critique, of the implications of a supervaluationist account of the SIA for the truth of incomparabilism. Our claim is that the implications of that view on this question are ambiguous, but we do not take this to be a flaw *per se* of a supervaluationist account of the SIA. We do, however, also happen to believe that the source of this ambiguity — supervaluationism's rejection of classical logic and semantics — is a good reason to disprefer supervaluationism as a theory of vagueness more generally. But establishing that goes beyond the scope of our argument here, which is conditional on the truth of epistemicism.

Supervaluationism is the only theory of vagueness that has been fully developed in relation to comparability and the SIA, though it nonetheless has an ambiguous relationship to comparability.[9] According to supervaluationism, in borderline cases 'x is Fer than, less F than or as F as y' is true, but

[8]One of the virtues of this necessary condition is that it is ecumenical between different theories of vagueness. The condition is not sufficient because there appear to be other propositions that are resistant to inquiry, but which are not borderline cases of vagueness. For example, Goldbach's Conjecture might be resistant to inquiry, but this has nothing to do with vagueness (Williamson 1997, 926).

[9]Broome (1997) first developed supervaluationism with respect to comparability. His discussion at pp. 88–89 reflects the ambiguity we discuss here. Some philosophers have argued that supervaluationism is inconsistent with incomparability (Gustafsson 2013; Espinoza 2008).

all of the disjuncts of this disjunction are neither true nor false. This is explained in the same way that the supervaluationism explains the law of the excluded middle (Broome 1997, 82). According to the supervaluationist, vague concepts can be admissibly 'sharpened' in numerous ways. For instance, some admissible sharpenings of 'more creative than' will draw the boundary between 'more creative than' and 'not more creative than' in different places. For the borderline case 'Francis is more creative than Kate', on some admissible sharpenings, Francis is more creative than Kate, whereas on others he is not. Supervaluationism dictates that 'Francis is more creative than Kate' is therefore neither true nor false. 'Francis is more creative than Kate' is only true (or as it is also said in the literature is 'supertrue') when Francis is more creative than Kate on *all* admissible sharpenings.

However, even in cases when 'Francis is more creative than Kate' is neither true nor false, i.e. is *not* supertrue, the disjunction 'Francis is more creative than, less creative than, or as creative as Kate' *is* true on all sharpenings, i.e. is supertrue, because all sharpenings entail a complete ordering. Therefore, on supervaluationism, the disjunction is true, even though each of its disjuncts is neither true nor false.

The truth status of the disjunction makes supervaluationism seem like a form of comparabilism about small improvement cases, whereas the truth status of the individual disjuncts makes supervaluationism seem like a form of incomparabilism. This puzzle is explained by the fact that the intuitive definition of comparabilism follows the dictates of classical semantics, which does not allow a true disjunction to have no true disjuncts. Since supervaluationism rejects this principle of classical semantics, it is not clear whether supervaluationism is a comparabilist or incomparabilist theory about small improvement cases.[10]

This ambiguity can also be brought out by examining the formalisation of the SIA we set out above. In our presentation of the argument, we included truth predicates in the premises themselves, and thus constructed a 'metalinguistic' version of the SIA. Here is P2 (a), (b) and (c):

P2. For some F, and some options x, $x+$, and y in F's domain:

[10] In his later work, Broome develops a version of supervaluationism which is about assertability rather than the truth. He argues that the new theory is incompatible with incomparabilism (Broome 2004, chap. 12 and 14). However, since the new theory is about assertability, and the theory severs the logical connection between assertability and truth, it has no implications for the SIA or incomparabilism (or the sorites paradox).

(a) It is not true that x is Fer than y

(b) It is not true that y is Fer than x.

(c) It is not true that $x+$ is Fer than y.

We arrive at P2 (a), (b) and (c) in the following way. Consider P2 (a). Because 'x is Fer than y' is a borderline case, it is *neither true nor false* that x is Fer than y, and by consequence it is *not true* that x is Fer than y. The same reasoning applies for P2 (b) and (c).

On classical logic and semantics, merely appending the truth predicate to a premise cannot affect the soundness of the argument of which the premise is a part. For instance, if my argument depends on the premise

P. S

then revising the premise to instead claim that

P'. 'S' is true

would make no difference to the argument's soundness. But this is not so on supervaluationism. According to supervaluationism, P2 (a), (b) and (c) are true, whereas versions of these premises which do not include truth predicates would be neither true nor false. To see this, consider a non-metalinguistic version of P2, P2', which does not include truth predicates in the premises:

P2'. For some F, and some options x, $x+$, and y in F's domain:

(a) x is not Fer than y

(b) y is not Fer than x

(c) $x+$ is not Fer than y

Now consider P2' (a). On supervaluationism, since P2' (a) concerns a borderline case, it is neither true nor false. That is, in such a case, 'x is not Fer than y' is neither true nor false. But for the SIA to be sound, its premises must be true. Similar remarks apply to P2'(b) and P2'(c). The premise is therefore false. Therefore, supervaluationism entails the unsoundness of the non-metalinguistic SIA. By contrast, each component (a–c) of the metalinguistic premise P2 is true according to supervaluationism; and thus supervaluationism supports the soundness of the metalinguistic SIA.

This is another way of bringing out supervaluationism's ambiguous relationship to comparability, and also shows why we use the metalinguistic version of the SIA: since (or so we argue) epistemicism implies comparabilism, the metalinguistic SIA highlights the fact that there is a distinction between the way that supervaluationism and epistemicism treat some versions of the SIA.

Epistemicist comparabilism or incomparabilism?

We now turn to the implications of epistemicism for comparability. First, we will provide a brief account of epistemicism. As is well known, epistemicism claims that borderline propositions are classically truth-functional but are distinguished by being propositions whose truth value *cannot* be known. For instance, the epistemicist claims that there is a precise point as we take hairs way at which 'Tom is bald' becomes true where before it was false, though we do not and cannot know where this point is (Williamson 1994, 198–201). The principle of bivalence is true: propositions have exactly one truth value — true or false; no proposition can be neither true nor false (Williamson 1994, 187–89). The epistemicist explains the inquiry resistance of borderline cases by appealing to our ignorance: no amount of further empirical checking would enable us to know whether Tom is bald or not — our epistemic deficit is non-contingent and incurable. Contingent ignorance can be resolved by further empirical checking, whereas, according to the epistemicist, the ignorance manifested in borderline cases cannot.

It might appear that epistemicism straightforwardly entails that options are comparable in small improvement cases. This is not so. Epistemicism is (deductively) logically compatible with both comparabilism about small improvement cases and incomparabilism. Consider first what we call *epistemicist comparabilism*.[11] Epistemicist comparabilism says that for all x and y in F's domain, x is either Fer than y, less F than y, or x and y are equally F and that only one of the disjuncts is true. For example, suppose that Francis is slightly less creative than Kate. There is then some slightly more creative version of Francis, Francis+, who is as creative as Kate, and a slightly more creative version again, Francis++, who is more creative than Kate. However, we cannot know the truth value of any of these three comparative propositions because the trichotomy of 'more creative than', 'as creative as' and 'less creative than' are vague. Epistemicist comparabilism posits a single point of precise equal creativity, and says that items either side of this point are either more creative than, or less creative than the items used

[11] Note again that this theory only implies that items are comparable in small improvement cases, and is compatible with there being incomparability for other reasons.

as the standard of comparison. Hence, the comparative ordering of options is complete (unless there is some other non-small improvement-based argument showing the ordering to be incomplete).

Epistemicist comparabilism can be visually represented by Broome's *standard configuration* (Broome 1997). Suppose that there is a linear scale of *F*ness, and that *the standard, x,* is in the middle of this scale, and that there is a set of options (y_1, y_2..., y_n) ordered in terms of their *F*ness. Epistemicist comparabilism posits that only one of the options in the y-set, y_e is exactly equally as F as x. The subset of options that are less F than y are also less F than x, and the subset of options that are *F*er than y are also *F*er than x. The grey box indicates the set of borderline cases for which we are incurably ignorant which of the components of the trichotomy holds:

However, as Broome (1999, 152) has pointed out, epistemicism is also (deductively) logically compatible with incomparabilism about small improvement cases. *Epistemicist incomparabilism* posits a zone of incomparability sandwiched by two zones of comparability. More precisely, it posits that there is a subset, S_1, of y options which are *F*er than x, and a subset, S_3, which are less F than x. However, it posits that, on the scale of *F*ness there is another subset, S_2, of y options sandwiched between S_1 and S_3, which are neither *F*er than nor less F than x. *Provided the options in S_2 and x are not equally F*, the options in S_2 and x are incomparable with respect to F. There is a sharp transition from the zones of comparability into the zone of incomparability. However, it cannot be known when this transition occurs because each component of the trichotomy is vague. This is incomparabilism with an incurable epistemic deficit.

A first pass at visually representing epistemicist incomparabilism by the standard configuration is presented below. (As we discuss in our criticism of epistemicist incomparabilism below, it is actually subject to a qualifying proviso, which makes visual representation difficult.) Suppose again that there is a linear scale of *F*ness, and one item, x, is in the middle of this scale, and that there is a set of options (y_1, y_2..., y_n) ordered in terms of their *F*ness. The grey box indicates the set of borderline cases for which we are incurably ignorant of which of the components of the trichotomy holds:

Should we accept epistemicist comparabilism or epistemicist incomparabilism? We cannot think of any reasons to favour epistemicist incomparabilism over epistemicist comparabilism. There are, however, two abductive reasons to believe that epistemicist comparabilism is true.

Firstly, epistemicist comparabilism posits a single point of precise equality. The epistemicist incomparabilist treatment of equality, by contrast, is problematic. It appears that there are two possible treatments. The first would be to claim that there is a solitary point within the gap between the application of '*F*er than' and 'less *F* than' (that is, within S_2) at which options are equally *F* and are therefore comparable. However, it cannot be true that there is a solitary point of equality and that options are incomparable. If x and y_e are equally *F*, then all other options (apart from y_e) in the sequence of items ($y_1, y_2, \ldots y_n$) that are ordered in terms of their *F*ness, must be *F*er than or less *F* than x. The subset of options that are *F*er than y_e must also be *F*er than x because x and y_e are equally *F*; and the subset of options that are less *F* than y_e must also be less *F* than x because x and y_e are equally *F*. Precise equality crowds out incomparability.

The second way for epistemicist incomparabilism to treat equality would be to claim that no pairs of items can be equally *F* within the gap between the zones of comparability (that is, within S_2). If this were true, however, the question of whether any two items were equally *F* could never be inquiry resistant, since it would have a determinate answer ('no'), and therefore there could never be borderline cases of 'equally *F*'. As discussed earlier, this has the consequence that 'equally *F*' cannot be vague.[12] There are reasons to believe that this is a mistake.

It seems that the question of whether predicates of the form 'is equally *F*' apply sometimes *can* be inquiry resistant. Suppose again that we are assessing whether Kate and Francis are equally creative. Intuitively, it seems that once we have all the information and are conceptually competent, we might still be unable to settle with complete confidence whether the two are equally creative; we would not be *certain* that they were *not* equally creative. But such certainty is what epistemicist incomparabilism requires, since on that view, the fully determinate answer to whether *any* two items are equally *F* is 'no'. Epistemicist comparabilism is, by contrast, compatible

[12]This is intuitive, but the explanation for it is somewhat cumbersome. For all pairs of items and all comparative predicates, there are two possibilities. Firstly, there are incomplete orderings, characterised by vagueness, for which there is one item x, and a subset of items, S_2 ($y_k, y_{k+1} \ldots, y_n$), ordered in terms of their *F*ness, and all members of this subset are neither *F*er than nor less *F* than x. For each comparison between x and an item in S_2, we know that equally *F* never applies. Thus, these cases are not inquiry resistant. Secondly, there are complete orderings that are not characterised by vagueness. For all pairs of items in these orderings, if we had perfect knowledge and were conceptually competent, then reducing contingent ignorance and improving conceptual competence would enable us to know whether or not 'equally *F*' applies.

with the intuitive lack of certainty about this case. Given that there is no deeper theoretical reason to accept epistemicist incomparabilism's stance on this issue, it is hard to see why we would accept the incomparabilist view. Indeed, all proponents of vagueness-based accounts of the SIA have hitherto assumed that predicates of the form 'is equally *F*' can be vague: according to supervaluationists, in borderline cases, *all* components of the trichotomy are neither true nor false. This suggests that there is significant intuitive support for the proposition that predicates of the form 'is equally *F*' can be vague.

Secondly, epistemicist incomparabilism as we have set it out says that there is a zone of incomparability that is sandwiched by two zones of comparability. However, this characterisation should be qualified; the story is still more complicated. This can be demonstrated by what we call the 'Monadic-Dyadic Argument'.

This argument begins by noting that, according to epistemicism, there is what we will call a precise 'monadic threshold' at which the truth value of a statement with a vague monadic predicate switches from true to false. This is, for instance, the threshold at which, as his creativity improves, 'Francis is creative' switches from being false to true. If this is true, then in many cases '*F*er than' will apply within the gap in which all of the components of the trichotomy are supposed to be false. This can be shown using the following principle:

> **Monadic-dyadic principle:** If x is F and y is not F, then x is Fer than y

We take the monadic-dyadic principle to be uncontroversial for a large class of comparatives (though there may be some exceptions, which we return to below).[13] If one person is creative, then she is more creative than all people who are not creative. Now imagine a musician, Elton, and a singer, Freddie, who stand just on either side of the monadic threshold of 'is creative': Elton is creative but Freddie is not. Therefore, given the monadic-dyadic principle, Elton is more creative than Freddie. However, since Elton and Freddie are very close to one another in terms of creativity and manifest creativity in different ways, 'Elton is more creative than Freddie' is also a borderline case, and so we cannot know whether or not it is true. Therefore, 'Elton is

[13]For example, does the fact that Nigel is dead and Brian is not dead entail that Nigel is deader than Brian? Our intuition is that this comparative is nonsensical, but others may disagree. We discuss more difficult cases below, but we claim nonetheless that the principle holds for a very wide range of comparatives.

more creative than Freddie' is true, but we cannot know whether or not it is true. Yet according to epistemic incomparabilism, 'Elton is more creative than Freddie' is false because, in virtue of being a borderline comparative case, it lies within a zone of incomparability.

Thus, epistemicist incomparabilism must be qualified. It should say that for some borderline cases of some vague comparatives, two items are incomparable, except when they are either side of the monadic threshold.[14] In that case, one item is *F*er than the other, so the items are comparable. These cases, it is important to note, will be pervasive. There is an infinite number of possible cases in which two items are either side of the monadic threshold and are a borderline case of the comparative form of that monadic predicate. Therefore, there are points of comparability in what we initially said must be a zone of incomparability.

Furthermore, if Elton and Freddie stand only marginally on either side of the monadic threshold, then Elton is only slightly more creative than Freddie. But if this is true, then it seems as though the following must also be true: there is some small improvement to Freddie's creativity which would make him as creative as Elton, where before he was not. But as we argued above, precise equality crowds out incomparability. If this line of argument is sound, then epistemicist incomparabilism collapses entirely. There may be other ways to qualify the theory so that it allows pockets of comparability in the zone of incomparability, but doing so seems ad hoc and lacks deeper theoretical or intuitive justification.

(It is worth noting in passing that, if epistemicism is true, this argument also counts against tetrachotomist views, such as Chang's parity view. Chang would argue that the comparison of Elton and Freddie is a 'superhard' case of 'more creative than' and that therefore they are on a par with respect to creativity. However, the Monadic-Dyadic Argument shows that in fact one is more creative than the other. Thus, if epistemicism is true, then there are points of comparability in what was initially posited to be a zone of parity. If epistemicism is true, this seems like a fatal flaw of all tetrachotomist theories. Note that this argument does not assume or imply that hard cases of comparison are borderline cases of vague dyadic comparatives. Rather, it moves from an assessment of vague monadic predicates to the claim that items are not on a par in terms of a

[14] Of course, not all borderline cases of comparatives are either side of the monadic threshold. For example, Mozart and Michelangelo were both creative. But this is a point about the *structure* of the epistemicist incomparabilist view.

shared property. This is compatible with it being true that hard cases of comparison are not borderline cases of vague dyadic comparatives.)

As we mentioned above, the monadic-dyadic principle is uncontroversial for a wide range of comparatives. However, one possible response to the Monadic Dyadic Argument is to argue that the monadic-dyadic principle is not true for axiological betterness.[15] There is a great deal of controversy about whether goodness can be reduced to betterness or vice versa (Gustafsson 2014), and some of this controversy may extend to the monadic-dyadic principle. For example, Gustafsson (2017) has defended 'blank critical range utilitarianism' in population ethics, according to which the monadic-dyadic principle is false. In brief, on this theory, lives can be good, bad, neutral, or 'blank' for the person living them. If a life is blank, it is neither good, bad, nor neutral. Due to the possibility of a blank life and the resultant (non-vagueness-based) incompleteness in the ranking of the goodness of lives, it is possible that some good lives are not better than blank lives, even though blank lives are not good (Gustafsson 2017, 15).

While it is true that the Monadic-Dyadic Argument fails if Gustafsson's axiology is correct, we would offer two rejoinders. Firstly, if the blank critical range axiology is true, then there are still no reasons to believe that epistemicist incomparabilism rather than comparabilism is true — we have merely lost one reason that favours comparabilism. And if the critical range theory is false and some other plausible axiology that is compatible with the monadic dyadic principle is true, then the Monadic-Dyadic Argument alone is sufficient to refute epistemicist comparabilism. The blank critical range axiology, moreover, is highly controversial, so epistemicist incomparabilism is also for this reason less probable than epistemicist comparabilism. This point generalises for all controversial axiologies which are putatively

[15] We thank a reviewer for pushing us on this point. That reviewer also suggested the following counterexample: Assume a hedonic axiology and imagine two states of affairs, S[Jane is happy to degree 10] and S*[Jane is happy to degree 20 or unhappy to degree 10]. S, let us say, is a good state; and S*, plausibly, is not. But because of the uncertainty of S*, it is not obvious that S is better than S*. Indeed they may seem incomparable. Our response to this is chiefly that we take relations of axiological betterness to hold between states of affairs, rather than between uncertain prospects, and therefore that this cannot show that the monadic-dyadic principle fails to hold, as a principle about axiological betterness. (This is only one of several possible rejoinders; if S* is instead understood as a disjunctive state of affairs, we would reply that we hesitate to accept the existence of such states.) Nonetheless, as we discuss in the main text, we recognise that on some plausible axiologies, the monadic-dyadic principle may be false.

incompatible with the monadic-dyadic principle, not just the blank critical range axiology.

Secondly, the monadic-dyadic principle can be amended to avoid this counterexample. The blank critical range theory only implies the falsity of the monadic-dyadic principle as it applies to lives, but not to other items that we can compare in terms of axiological betterness, such as experiences. All that is needed to decisively refute epistemicist incomparabilism is for some version of the Monadic-Dyadic Argument to commit the incomparabilist to some pockets of comparability in the zone of incomparability. In general, it seems unlikely that there could be an argument showing that the monadic-dyadic principle fails to hold for all possible items that we can compare in terms of axiological betterness; it is plausible that it will always be possible to develop some version of the monadic-dyadic principle which is sufficient to refute epistemicist incomparabilism.

In sum, *if* we believe epistemicism is true, then incomparabilism about small improvement cases is drained of all of its intuitive force. Incomparabilism was initially intuitively plausible because it provided an explanation of the phenomena in small improvement cases. If we can explain those phenomena with appeal to unknowable boundaries and unknowable precise equality, there is no reason to accept the intuitive and theoretical problems that come with a conjunction of unknowable boundaries *and* incomparabilism. Unknowable boundaries ought to be treated as a substitute for incomparability.[16] If epistemicism is true, then in small improvement cases incomparabilists confuse our *ignorance* of a ranking with the lack of a ranking.

Sharp boundaries and higher-order vagueness

There is one other point about epistemicist comparabilism that is worth making. Many people take the idea of an unknowable sharp boundary to be so counter-intuitive as to render epistemicism as a wider theory of vagueness completely implausible. There must, these people believe, be some more plausible non-epistemicist theory of vagueness, which does not unambiguously entail comparabilism. Sharp boundaries, on this view, are a liability.

[16] Moreover, if epistemicism is true, then our argument here shows that 'comparable to' is not vague. If epistemicism is true, we know that one of the components of the trichotomy applies. So, 'comparable to' has no borderline cases and is therefore not vague. Elson (2014) discusses the possibility that 'comparable to' is vague.

In fact, however, this intuition provides no leverage against epistemicism, as things stand in the literature on comparability. This is because all existing treatments of small improvement cases posit sharp boundaries. The only difference is that they move them. Not only that, having moved them, they treat them differently from the first-order boundaries they attempted to avoid in the first place.

According to Broome's (1997) early form of supervaluationism, there is a precise and knowable answer to the question 'how many frescoes must Francis paint for 'Francis is more creative than Kate' to shift from being neither true nor false to being true?'[17] Similarly, according to Chang's parity view, for some predicates'*F*er than' and 'as *F* as', there is no sharp transition from 'x is *F*er than y' to 'x is as *F* as y', but there is a sharp transition from 'x is *F*er than y' to 'x is on a par with y with respect to *F*' which, it also seems, is precise and knowable.[18] The problem is that it seems to be just as hard to determine where these boundaries are as it does to determine where the first-order boundaries are: hard cases recur at higher orders. If Broome and Chang were to say that these boundaries are sharp but unknowable, then they would be committed to an epistemicist account of higher-order hard cases. But then, it is difficult to see why they would not just accept an epistemicist account of first-order hard cases.

Thus, two of epistemicism's main rivals posit sharp *and knowable* boundaries.[19] This seems at least as unbelievable as the sharp *and unknowable* boundary posited by epistemicist comparabilism. It is the unknowability of the boundary that accounts for the intuitive inquiry resistance of hard cases, hard hard cases and so on. In this respect, existing rivals fail to explain the phenomena. They treat higher-order hard cases differently from the first-order cases raised by the SIA, despite the apparently identical phenomenology of first-order and higher-order cases.

[17] In his later work, Broome acknowledges that there is higher-order vagueness, but says he excludes it from his theory for the sake of simplicity (Broome 2004, 180–81). It is not clear that this is justifiable. After all, we could rule our first-order borderline cases for the sake of simplicity as well, but we do not do so because we want to account for the phenomena.

[18] Chang argues that incomparabilism is implausible because it says that there is a precise transition from a zone of comparability to one of incomparability (Chang 2002, 673–79). Chang's theory has an exactly analogous feature. For criticism of Chang's argument see (Elson 2014).

[19] Raz is not explicit about this, but the same seems to apply to his arguments for hard incomparability and for incomparability grounded in semantic indeterminacy (Raz 1986, chap. 13).

By contrast, epistemicists happily accept higher-order vagueness. For the epistemicist, higher-order vagueness is understood as ignorance of our ignorance at lower orders of vagueness (Williamson 1994, 3). The zone of borderline cases has sharp boundaries, but we cannot know where they are because there are borderline borderline cases. For instance, we cannot know which is the first borderline case of the monadic 'is bald' or the dyadic 'more creative than'. Therefore, it seems to be a dialectical advantage of epistemicist comparabilism that it bites the first 'sharp boundary bullet' that comes its way.

Could these rival views adapt to better account for higher-order cases? We find it hard to see how Chang could plausibly alter her account to deal with higher-order hard cases. In accord with the spirit of parity, she could propose that in the hard cases of the application of 'on a par', there is a zone of 'super-parity'. But such a move seems to be *prima facie* unattractive. Supervaluationism seems to be better placed in this regard since supervaluational accounts of higher-order vagueness have been presented in the vagueness literature (Williamson 1999). This has, though, yet to be done in the literature on comparability. Moreover, even if it is done in the future, supervaluationism has to posit knowable sharp boundaries somewhere (Sorensen 2001, 82–83). In sum, epistemicist comparabilism is not only worth taking seriously in the debate about the SIA, it has significant advantages over existing rival accounts.

It is true that some philosophers deny the existence of higher-order vagueness (Wright 2010). Nonetheless, as things stand in the debate on comparability, epistemicist comparabilism has an advantage on the higher-order vagueness front. The phenomenology of first-order borderline cases and putative higher-order borderline cases does appear to be the same: further inquiry will not enable us to know whether a predicate applies at higher-orders.[20] Thus, it certainly seems as though an explanation is required from proponents of non-epistemicist theories of comparability, which has not yet been developed. They must either explicitly deny the possibility of higher-order vagueness or explain why they treat it differently from first-order vagueness.

[20]Indeed, as we mentioned above, Broome already accepts that there is higher-order vagueness, and Chang argues that there cannot be a sharp transition from a zone of comparability to a zone of incomparability. Thus, she accepts something very close to the intuition underlying higher-order vagueness.

Conclusion

Many have thought that the hard cases raised in some SIAs simply cannot be cases of ignorance. How can they be, given that all of the relevant information is in, yet the cases remain resistant to inquiry? Since they are not cases of ignorance, it must be the case that each component of the trichotomy fails to hold. Epistemicism about vagueness provides an escape from this train of thought. If these hard cases are borderline cases of vague predicates, and if epistemicism is true, then one of the components of the trichotomy is true but we cannot know which. The unknowable boundaries posited by epistemicism force us towards comparabilism about small improvement cases. Furthermore, even if hard cases are not cases of vagueness, if epistemicism is true, then options cannot be on a par.

We have argued for several further conclusions as well. For one, epistemicist comparabilism has an important advantage over existing rival accounts of the SIA. Epistemicist comparabilism appears to be better equipped than any existing rival theory to account for *all* hard cases: it can account for hard cases, hard hard cases, and so on. Rival theories, on the other hand, fail to cope with higher-order hard cases.. For another, our argument may be practically important for axiology: many have thought that the SIA provides one argument for the incompleteness of the betterness ordering, by showing that some options can be incomparable with respect to goodness. But if our thesis is correct, then the SIA fails on this front.

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