The Sorites, Linguistic Preconceptions, and the Dual Picture of Vagueness[*]

MARIO GÓMEZ-TORRENTE
Instituto de Investigaciones Filosóficas, UNAM, México DF 04510, Mexico
mariogt@servidor.unam.mx

1. Introduction and overview.

Following roughly a formulation of Delia Graff Fara, we may say that we have an instance of the sorites paradox when, in a particular occasion of use, we are confronted[1] with a group of sentences of the following form,[2] each of which seems highly compelling in that occasion of use:

(A) $(\exists x_1)\ldots(\exists x_n)([Kx_1 \;\&\; Kx_2 \;\&\; \ldots \;\&\; Kx_n \;\&] \; Rax_1 \;\&\; Rx_1x_2 \;\&\; \ldots \;\&\; Rx_{n-1}x_n \;\&\; Rx_nz)$;
(B) $[Ka \;\&] \; Fa$;
(C) $(\forall x)(\forall y)([Kx \;\&\; Ky \supset] (Fx \;\&\; Rxy \supset Fy))$;
(D) $[Kz \;\&] \;{\sim}Fz$

(cf. Fara 2000, pp. 49f.). The brackets indicate that the bracketed parts will appear in some instances of the sorites paradox (those involving a comparison class; see below) but will not appear in others. Here "F" is to be replaced with the sorites susceptible predicate, "a" with a name of a case of application of the predicate which is intuitively clear in the occasion of use, "z" with a name of a case of negative application which is intuitively clear in the occasion of use, and "R" with a name of some binary relation. The occasion of use is understood as containing some factors that supply at least a universe of discourse (and range for the quantifiers) which includes the things named by "a" and "z". In the case of at least some sorites susceptible predicates (such as "is small" or "is expensive"), interpretation seems to require the occasion of use to supply a comparison

[1] The sentences need not be physically uttered for the paradox to arise, but at least a mental utterance of some sort will occur if the paradox is to be considered by a thinker at all.

[2] There are other versions of the sorites; the basic considerations of this paper will apply to them without substantive changes.

class, which may coincide with or be properly included in the universe of discourse. We may view the comparison class as the interpretation of "K" in the bracketed parts (even though sometimes there may not be a predicate naming the comparison class, which may be left implicit). In these cases interpretation also seems to require the occasion of use to provide further standards of some sort for the application of "F" and its relationship with "R", which are partly responsible for the fact that (B), (C) and (D) are compelling in the occasion of use. And there may be other things that full interpretation requires the occasion of use to provide. The paradox is that every set of fully interpreted utterances of sentences of the form of (A), (B), (C) and (D) (whether we include the bracketed parts or not) is inconsistent according to classical semantics and logic, and yet many such sets are highly compelling in their corresponding occasions of use.[3]

For example, "F" may be replaced with "is small", "R" with "has a population of 1 inhabitant less than", "a" with "Smalltown", the name of a town with just 100 inhabitants, and "z" with "Nonsmalltown", the name of a town with 49,900 inhabitants; the relevant comparison class (the interpretation of "K") may be taken to be the set of towns in the world that at present have 50,000 inhabitants or less, and the universe of discourse may be any set that includes that set of towns. Then (B_{small}), (C_{small}) and (D_{small}) are all highly compelling under normal standards[4], and we may also suppose for the sake of the example that we know (A_{small}) to be true as a matter of fact:

(A_{small}) $(\exists x_1)\ldots(\exists x_{49,799})(Kx_1 \& \ldots \& Kx_{49,799} \&$ Smalltown has a population of 1 inhabitant less than $x_1 \& x_1$ has a population of 1 inhabitant less than $x_2 \& \ldots \& x_{49,798}$ has a population of 1 inhabitant less than $x_{49,799} \& x_{49,799}$ has a population of 1 inhabitant less than Nonsmalltown);

(B_{small}) K(Smalltown) & Smalltown is small;

(C_{small}) $(\forall x)(\forall y)(Kx \& Ky \supset (x$ is small & x has a population of 1 inhabitant less than $y \supset y$ is small));

(D_{small}) K(Nonsmalltown) & ~Nonsmalltown is small.

---

[3] The use of (semi-)formalized language is not essential to the formulation and existence of the paradox; it just helps make somewhat clearer its formulation and its relevance for classical semantics and logic.

[4] But not under all standards. For example, it is imaginable that we can work with a standard under which even Smalltown counts as not small, and only some very small towns of under 50 inhabitants count as small. (See related remarks in Fara 2000, p. 65; see also section 3 below.)

Assuming that the truth of (A_{small}) is not in dispute, a solution of the paradox must convince us that one or more of (B_{small}), (C_{small}) and (D_{small}) is not true, or that classical logic or semantics do not apply. The same holds, of course, of every highly compelling set of fully interpreted utterances of sentences of the form of (A), (B), (C) and (D).

Not all predicates that have been held to be sorites susceptible seem sorites susceptible for the same reasons. Many (though not all) sorites susceptible degree adjectival predicates (such as "is small" or "is expensive") give rise to very compelling (A)-(D) sets, as in the example above. Many predicates whose predicative element is a scalar noun (such as "is a heap" or "is a youngster")[5] do not seem substantively different in this respect. However, other predicates, and in particular some whose predicative element is a non-scalar noun, e.g. a noun for a typical natural kind (such as "is a dog") do not seem to give rise to (A)-(D) sets that are compelling for the same reasons. And the situation with other predicates may not be subsumable under any of these two usually discussed types. In this paper I will sketch a picture of the workings of sorites susceptible predicates in English and similar natural languages—including an outline of a solution of the sorites paradox—that is especially applicable to many adjectives and scalar nouns. The picture is applicable also to other predicative words and phrases, but lack of space will prevent extended discussion of this topic here (see footnote 28 and surrounding text).

The picture is a *dual* picture, because it is based on a division of occasions of use of a sorites susceptible predicate into *regular* and *irregular*, according as to whether the predicate has a reference (extension) in the occasion of use or not. It is also based on two distinct sub-pictures of how language, and in particular the mechanisms for the fixing of reference (and, more generally, of intension), work in regular occasions of use and fail to work in irregular occasions of use. On the picture, the meaning of a typical word is pretty meager, though it comes together with a number of firmly accepted sentences containing the word, its associated "preconceptions", which are not part of its meaning but are somehow designed to help fix its extension (and intension) in particular occasions of use. Typically, some of these preconceptions intuitively state that a certain predicate has some

---

[5] I understand a scalar noun as one that has an analytically associated dimension of comparison, usually also analytically connected with a degree adjective—a heap, on the acceptation that I take to be relevant to the sorites discussion, is a *big* pile of suitable things lying one on another.

paradigmatic cases of application and negative application, while other preconceptions intuitively postulate generic principles for the expansion of the extension of the predicate beyond its paradigmatic range. These ideas are explained in section 3. According to the dual picture, in occasions of use where the preconceptions and the facts of the matter about a typical degree adjective (or scalar noun) give rise to an instance of the sorites paradox, the occasion of use is of the irregular kind: the adjective (or scalar noun) lacks an extension (and an intension) and as a result the utterances of sorites-relevant sentences containing it don't have truth conditions. (But sorites-paradoxicality is only one source of irregularity.) In particular, for example, (B_{small}), (C_{small}) and (D_{small}), as uttered in the occasion of use described above, are neither true nor false.

This thesis about sorites-paradoxical occasions of use is related to treatments that postulate reference or truth-value gaps to deal with other paradoxes and inconsistencies, but it is radically different from standard theories of vagueness that postulate truth-value gaps exclusively for alleged so-called "borderline cases" of sorites susceptible predicates. The latter theories postulate that a sorites susceptible predicate has some kind of non-classical extension, and that the logical expressions operate on that extension through some suitably ad hoc non-classical semantics or logic. On the dual picture, a typical sorites susceptible degree adjective (or scalar noun)[6] has no extension at all in those occasions of use. But the picture as developed here will also postulate (in section 5) that this is psychologically obscured by the fact that the default mechanism designed to fix a classical extension for these words often succeeds in doing so, even in closely connected regular (thus non-paradoxical) occasions of use. Section 5 also compares the "extension gap" thesis about sorites-paradoxical occasions of use with an analogous and independently plausible thesis about extension (and intension) gaps arising from certain linguistic conflicts among paradigm and generic preconceptions for other adjectives and other nouns. This comparison makes plausible the extension gap thesis for typical sorites susceptible degree adjectives in sorites-paradoxical contexts. It will also help me defend some further theses about the psychological reasons why an appearance is created, even after exposure to the sorites paradox, that utterances of sentences of the forms (B), (C)

---

[6] Henceforth I will omit the parenthetical addition of "and/or scalar noun(s)" to "typical degree adjective(s)" in many cases in which it should be tacitly understood.

4

and (D) have truth conditions even in paradoxical occasions of use, and in particular of why people exposed to the sorites paradox tend to give a preference to their intuitions about the truth value of the (B) and (D) sentences over their intuitions about the truth value of the (C) sentence. These theses will appeal to plausible conjectures about the psychology of any reference-fixing mechanism that relies heavily on paradigms.

It is plausible to assume that if a certain mechanism of reference-fixing exists (and persists), it must be successful in at least a vast number of occasions. The dual picture postulates that in a vast number of occasions of use of a typical sorites susceptible degree adjective, the default reference-fixing mechanism of preconceptions works successfully and turns the occasions of use into regular ones in which even (B), (C) and (D) sentences have truth conditions. This happens when the paradigm and generic preconceptions and the facts of the matter about the adjective determine an extension and an anti-extension which are mutually exclusive and jointly exhaustive with respect to the universe of discourse in the occasion of use; in these cases no compelling (A) sentence is in sight. The hypothesis that these occasions of use are very numerous is a purely empirical one, and cannot be fully decided on the basis of *a priori* linguistic reflection on the semantics of sorites susceptible predicates. Some considerations that favor it are offered in section 4, where the picture's semantic treatment of regular occasions of use is sketched as well.

It may also be tempting to assume, additionally, that successful communication with grammatically declarative sentences must nearly always use utterances with truth conditions. But I don't take this to be a compulsory thesis. What I do take as a very reasonable thesis is that communication with declarative utterances generally occurs under the tacit assumption that these utterances have truth conditions. Plausibly, it also involves some understanding, however implicit and inchoate, of how those truth conditions should be determined if they in fact exist, as well as of how the referents of particular classes of words should be determined if they in fact exist. I take it that semantic theory often appeals to this implicit understanding as evidence in the construction of theories. So I take it as a reasonable burden on semantic theory to describe reference-fixing mechanisms for classes of words that plausibly underlie our tacit understanding of the referential properties of those words. But this is compatible with the possibility that there may be frequent instances of successful communication by

5

means of utterances without truth conditions. In the presence of an adequate theory of the mechanisms of reference-fixing, successful communication by means of such utterances is explained by the fact that speakers can elicit from hearers all sorts of desired responses under the tacit common understanding of how the truth conditions of those utterances would be determined (if they had in fact existed). To take a simple example, a mother can say to her child "Santa Claus will bring you presents tomorrow" and get the child to expect happily the presents from an unknown man that at some point someone has named "Santa Claus". This particular instance of communication is not prevented by the lack of a referent for "Santa Claus" or by the presumable lack of truth conditions for the mother's sentence.

The search for a convincing, or even promising, idea for a solution of the sorites paradox(es) has proved to be very elusive, perhaps surprisingly so. Standard attempts are predictably affected by some sophisticated problem or other, but more importantly, they are also generally unpersuasive even when taken as rough pictures of the workings of the sorites susceptible predicates and their interaction with the logical expressions. I will start (in section 2) with a brief survey of what I take to be some fundamental (as opposed to sophisticated) problems afflicting the most familiar standard theories. The survey is based on a tripartite classification of standard solutions of the sorites as "paradigmatist", "genericist", or "strongly nihilist", which I think is illuminating in its own right. The dual picture is a *neutral* picture, in that it is intermediate between all these standard (and extreme) positions. Later it will be useful to have made explicit the fundamental problems of standard theories, for much of the support I wish to marshal for the neutral dual picture will consist in noting that it does not suffer from those problems. The picture is also, I hope, not unpersuasive at first sight. It is of course not free from potential objections, only some of which can I try to describe and defuse here. Nevertheless, I hope this initial exposition can convince some that it is a step in the right direction. I also hope that it can be expanded and refined in future work.

2. A classification of familiar theories, and their problems.

The theories of the sorites paradox that we may call *optimistic* claim that, despite appearances, (C) utterances, regardless of the occasion of use, must be false, and do not

6

postulate a semantics or logic for the logical expressions distinct from the classical. For example, they propose that, for any one of the sorites series $t_1, t_2,\ldots, t_{49,798}, t_{49,799}$ making true (the matrix of) (A_{small}) that can be drawn from the comparison class above, the negation "it is not the case that for all t_i and t_{i+1}, if t_i is small then t_{i+1} is small" is true; or, what is equivalent given classical semantics and logic, the existential quantification "there is a town with i inhabitants that is small and a town with i+1 inhabitants that is not small" is true. Optimism is often (but need not be) accompanied by *epistemicism*, the additional claim that we cannot know which number i is. (See e.g. Cargile 1969, Williamson 1994.) If epistemicism is true, it provides a certain kind of explanation of the natural repugnance we feel for optimism: we cannot accept the existential quantification according to which there are such towns because we cannot find out which number i is. There are a number of sophisticated problems with epistemicist theories (see e.g. Gómez-Torrente 2002), but the basic problem would seem to be that, no matter how sophisticated the defenses of optimism get, it is very hard to believe that some fact about the actual semantics of "small" makes those existential quantifications true, at least in occasions of use such as the one above.[7] And indeed, we have no plausible semantic model of how they could be true.[8] One appealing feature of optimism, however, is that it does not postulate a non-classical semantics or logic for the standard logical expressions.

    Supervaluationists (Fine 1975 is the prime source) also say that those existential quantifications must be true. But unlike optimists, they claim that the existential

---

[7] Some optimists have theories compatible with anti-epistemicism that appeal to a special kind of *contextualism* to explain why (C) sentences seem true to us. Fara (2000) claims that some factor that context contributes to interpretation makes it the case that the sharp cut-off point between the extension and the anti-extension of "small" in the context is never "where we look", which explains why we believe of any pair of towns t_i and t_{i+1} that it is not the case that t_i is small and t_{i+1} is not small. But even if this were true, it would give us no reason to believe that the cut-off point is in some place where we don't look (see e.g. Heck 2003, p. 120). Soames (1999), ch. 7, uses a similar strategy, although he is not strictly an optimist, since he postulates that there is no sharp cut-off point between the small and the non-small towns. But he postulates an equally implausible semantically determined sharp cut-off point between the small towns and towns which are supposed to be neither in the extension of "small" in the context nor in its anti-extension (the "borderline" towns).

[8] As emphasized e.g. by Schiffer (1999) and Wright (2003).

quantifier does not have its classical semantics, at least when it interacts with sorites susceptible predicates. They claim that "$(\exists x)(\exists y)(Kx$ & Ky & x is small & x has 1 inhabitant less than y & ~y is small)" may be true without there being some specific towns that make true "(x is small & x has 1 inhabitant less than y & ~y is small)". This is supposed to calm our worries about how the existential quantification could be true. But it sounds very implausible: assuming, as seems reasonable, that classical semantics is the semantics that we intuitively ascribe to the existential quantifier, why should we believe that it adopts an ad hoc semantics in certain cases? Despite occasional timid claims to the contrary, I see no evidence that we intuitively occasionally ascribe this semantics to the existential quantifier.

Other theories of the sorites are based on even more radical departures from classical semantics. For example, typical *degree theorists* (such as Machina 1976) claim that the existential quantifier works in such a way that the existential quantification in question comes to have some alternative degree-theoretic truth value—it is (approximately) "half-true". For what we might call *primitivists*, sorites predicates also determine a *sui generis* semantics for the logical expressions, but they claim that we need not know (or even that we may be unable to know) what this semantics is, at most that it is different from the classical. (This is the way I read Sainsbury 1990.) As with the supervaluationist, the fundamental problem for the degree theorist and the primitivist is that postulating a (possibly unknowable) non-classical semantics for the logical expressions merely because they interact with sorites susceptible predicates is counterintuitive and ad hoc. Like optimists, I find the thesis that the logical expressions are in all essential respects governed by classical semantics and logic more than compelling.

We may call all of these views *paradigmatist*, since they stick to the truth of the (B) and (D) sentences in each particular occasion of use, affirming the application and negative application of the sorites predicate in contextually paradigmatic cases, and they claim that the (C) sentence is somehow not true. An altogether different kind of option is to claim that somehow the (C) sentence is made true and either the (B) or the (D) sentence, or both, are made not true by the relevant semantic mechanisms. For this reason we may call these views *genericist*. In the case above, and assuming classical semantics

and logic, there are three suboptions: (a) to claim that "Smalltown is small" is true and "~Nonsmalltown is small" is false—and presumably that all towns are in fact small; (b) to claim that "Smalltown is small" is false and "~Nonsmalltown is small" is true—and presumably that no town is in fact small[9]; (c) to claim that "Smalltown is small" and "~Nonsmalltown is small" are both false. (c) is absurd and can safely be discarded. One general problem with (a) and (b) is that they give a preference to the intuitions about (C) utterances over the intuitions about (B) and (D) utterances. However, to me they seem more or less equally strong intuitions, and if I were forced to choose, I would say that the intuitions about the truth value of (B) and (D) utterances feel somewhat stronger after exposure to the sorites paradox. Also, the idea that, if sorites susceptible predicates do have extensions, then these are non-trivial extensions that effect semantically real distinctions between objects seems very plausible.[10] But for the genericist, the extensions of sorites predicates never manage to do that.

Williamson (1994, pp. 165ff.) has placed the (b) suboption together with other views on which the (logically atomic) sorites susceptible predicate also lacks application, although in this case because the predicate is nonsensical or in some milder way semantically defective, but in any case lacks an extension altogether. All these views on which the sorites susceptible predicate lacks application he calls *nihilist*. The views on which the sorites predicate is in some way semantically defective we might call (in order to distinguish them from the (b) suboption above) *strongly nihilist* (Dummett 1975 is an (imperfect) example; Eklund 2002 is closer to the idea). Strong nihilists are certainly not paradigmatists, but they are not genericists either, since the sorites predicate is just as defective in the (C) sentence as it is in the (B) and (D) sentences. Something that seems to me to be a problem for strong nihilists (or at least for representative strong nihilists) is that they seem to think that all of the (B), (C) and (D) sentences are compelling because

---

[9] Unger (1979) embraces this view for logically atomic copular predicates whose predicative element is a count noun applying to what he calls "ordinary things": predicates like "is a table", "is a house", etc. have an empty extension. Elsewhere he held the same view for natural kind predicates, but he changed his view about these in Unger (1984). I am unsure of what he would say of predicates like "is small".

[10] As I will note in footnote 23, however, options like (a) or (b) are clearly the right options in some special non-paradoxical occasions of use of sorites predicates.

the semantic rules for the sorites susceptible predicate in some way dictate that they must be accepted as true, if one is to abide by the meaning or broadly speaking the semantics of the predicate. (More exactly, what they claim is that, e.g., given the meaning of "small" and uncontroversial facts about the population of Smalltown, (B_{small}) must be accepted.) But I doubt that (B_{small}), (C_{small}) and (D_{small}) seem compelling because of that. If they did, the paradigmatist and genericist positions alike would seem to us to be excluded on purely semantic grounds; we would have the feeling that abandoning either of (B_{small}), (C_{small}) or (D_{small}) would inevitably amount to changing the meaning or the semantics of "small". But I don't think we have that intuition. I think that when in theoretical discussion we are exposed to optimism or to a (b)-type genericism we just see them as weird, not analytically excluded speculations that might conceivably uncover the concealed semantics of the sorites susceptible predicates. (We don't see them the way we would see a theory which claimed that being unmarried is not an analytically necessary condition of bachelors.) In any case, a problem for all varieties of strong nihilism is that it is incompatible with the assumption (made in section 1) that the default reference-fixing mechanism for typical sorites susceptible degree adjectives must work successfully in a vast number of occasions. In fact, for the strong nihilist, just like for the genericist, we can never effect semantically real distinctions between objects by means of sorites susceptible degree adjectives. A final problematic consequence of strong nihilism is that it's self-referentially "instable": if it were true, it could not be stated with truth, given that, in all probability, it would have to use sorites susceptible predicates in its own statement.

My purpose in what follows is to sketch a basis for a picture of vagueness that is not affected by the fundamental problems of the theories that we have reviewed in this section. How the picture avoids each of the problems will be pointed out along the way.

3. Linguistic preconceptions.

The picture, or at least my defense of it, relies on a broadly Kripkean view of language as evolving through the appearance and modification or abandonment of what we might call *preconceptions*. (Kripke has used the word "prejudices" for this or a closely related

concept.[11] I prefer "preconception" both because it indicates that there may be differences between the two concepts and because it seems less negatively charged than "prejudice".) In general, these preconceptions are sentences which are very resolutely assented to by minimally sophisticated normal people at relatively pretheoretical levels of use, sentences that are very difficult or even nearly impossible to abandon without exposure to relatively extensive reflection or empirical research. Preconceptions need not be *a priori*, necessary, analytic or even in any sense dictated to be of obligatory acceptance by the semantics of an expression; they just have to be very hard to give up. Nevertheless, among preconceptions some (perhaps all) are what we might call "linguistic": they have a bearing on the extensions (and the intensions) that we assign to words, and in particular on the extensions that we assign to predicates. But not even linguistic preconceptions are invariably or even usually analytic or dictated to be of obligatory acceptance by the semantics of an expression.

The Kripkean picture I have in mind postulates that we may view most predicates (and most words) as having a pretty meager meaning that usually does not suffice to fix their extension (or their intension),[12] but also as "introduced" in some way together with a number of linguistic preconceptions involving them, preconceptions that are somehow designed to help fix their extensions, possibly with respect to particular occasions of use. Now a further idea, less definitely Kripkean, but certainly suggested by Kripke's presentations, is that an "initial" set of preconceptions {Φ(P), Ψ(P), X(P),…} about the extension of a predicate "P" is "introduced" together with a tacit *conditional instruction*. We may also view this as a linguistic preconception (perhaps one that in some sense is *a priori* or dictated to be of obligatory acceptance by the semantics of the predicate), having a form similar to "If there is exactly one set Q such that Φ(Q), Ψ(Q), X(Q), …, then the extension of "P" is that set". These instructions help fix the extension of "P" when their antecedents are satisfied. But when their antecedents are not satisfied, i.e. when the preconceptions in the initial set are not jointly uniquely satisfied, it may often be unclear that an extension is determined for the predicate.

---

[11] For exposition of the Kripkean notion of a prejudice see Gómez-Torrente (forthcoming).

[12] Henceforth I will omit the parenthetical addition of "intension(s)", "its(their) intension(s)", etc. in many cases in which it should be tacitly understood.

There are presumably other general, but less definite or less compelling linguistic preconceptions that may help in some cases in which those antecedents are not satisfied. For example, there may be general preconceptions exhorting us to try to assign extensions to predicates by abandoning those of the preconceptions in the initial set that intervene less in the use of the predicate, or by abandoning those whose abandonment provides for the simplest way of obtaining an extension (if any), etc. But even after (implicit) attempts to apply these further preconceptions, conflicts of unsatisfiability or other problems may often remain unresolved.

The mentioned conditional instructions are similar to Kripkean conditionals by means of which in some way an explicit or implicit attempt is made to fix the reference of some proper names and general terms for natural kinds, substances or phenomena. One example is "If there is exactly one planet causing the perturbations in the orbit of Uranus, then "Neptune" refers to that planet", which successfully fixes the extension (reference) of "Neptune". (As well as its intension, which on account of its rigidity is simply the function assigning Neptune to each possible world.[13]) Here the sentence "There is exactly one planet causing the perturbations in the orbit of Uranus" cannot be called a preconception in the strict sense above, as it is certainly not resolutely accepted by normal people at relatively pretheoretical levels of use, though it is clearly not analytic or *a priori*, and it has a role in fixing the reference of "Neptune". But stricter examples are provided by general terms for natural kinds, substances and phenomena. In the case of "dog", it is natural to assume the existence of some such conditional instruction as "If there is exactly one set of which (most of) a, b, c,… are members and such that the things that are in it are exactly the instances of a certain natural kind, then the extension of "is a dog" is that set" (where "a", "b", "c",… are names of things which are taken as paradigms of dogs). In this case "(Most of) a, b, c,… are dogs" and "The things that are dogs are exactly the instances of a certain natural kind" are plausibly viewed as initial linguistic preconceptions about "dog". They have an apparently successful (implicit) role

---

[13] Assuming that "Neptune" is "obstinately rigid" in the sense of Nathan Salmon (1982).

in fixing both the extension and the intension of "is a dog".[14] (On account of the rigidity of "dog", the latter is simply the constant function assigning the set of possible dogs to each possible world.[15])

One distinction between two important kinds of preconceptions stands out, and it is already illustrated in the case of "dog". It's the distinction between *paradigm* preconceptions and *generic* preconceptions. Paradigm preconceptions are relatively simple preconceptions whose intuitive content is either that a certain predicate applies to a certain specific object or objects (*positive* paradigm preconceptions) or that it negatively applies to a certain specific object or objects (*negative* paradigm preconceptions). (One example of (positive) paradigm preconception would be "(Most of) a, b, c,… are dogs".) Generic preconceptions, on the other hand, are simply preconceptions which are not paradigm preconceptions. Often they intuitively state necessary, sufficient or other sorts of general conditions for the application or negative application of a predicate. They are designed to guide us in the expansion of our use of the predicate beyond its paradigmatic range of use. (One example would be "The things that are dogs are exactly the instances of a certain natural kind".)

One specific proposal of the picture in this paper is that typical sorites susceptible degree adjectives (and scalar nouns) provide yet another example of predicative words associated with a set of preconceptions that includes paradigm and generic preconceptions designed to help fix the extension of those words.[16] (B) and (D) sentences in occasions of use where they are compelling are examples of paradigm preconceptions; (C) sentences in occasions of use where they are compelling are examples of generic preconceptions. But there is one important difference one must emphasize with respect to "is a dog". The intuitive truth value of paradigm and generic sentences for typical degree adjectives varies extremely with the occasion of use, unlike in the case of "dog" and

---

[14] Successful at least over usual universes of discourse, one of which presumably constitutes the intended domain of quantification in these preconceptions. See the text surrounding footnote 28 for more on this qualification.

[15] Assuming that a natural kind predicate is rigid because its designation in all possible worlds is the same set of possible objects. (Cf. the notion of "obstinate essentiality" in Gómez-Torrente 2006.)

[16] The importance of paradigms for our understanding of sorites susceptible predicates is emphasized by Sainsbury (1990).

related words. It is natural to postulate the existence of abstract linguistic preconceptions associated with typical sorites susceptible degree adjectives that are not intended to help fix an absolute extension but one relative to an occasion of use, or in other words, regulatory principles for the adoption of concrete paradigm and generic preconceptions relative to particular occasions of use.[17]

An abstract preconception regulating the acceptability of specific paradigm preconceptions relative to an occasion of use for "small" presumably takes a form similar to this:

> In an occasion of use, that already provides a universe of discourse U and a comparison class K included in U, one may take members r_1, r_2, etc. of K as cases of small things and/or members s_1, s_2, etc. of K as negative cases of small things, just as long as the relevant sizes of r_1, r_2, etc. are smaller than the relevant sizes of s_1, s_2, etc.

This would account for the fact that the intuitive truth value of paradigm sentences for "is small" varies extremely with the standards in operation in the occasion of use. In one occasion of use (e.g. a conversation between wealthy people looking for an apartment) 100 square meters is a positive paradigm of a small size for an apartment; in another (a conversation between people with very modest incomes) 100 square meters is a negative paradigm of a small size.

On the other hand, even the intuitive truth value of a concrete generic preconception for "is small" in the occasion of use involving the wealthy (or even the not so wealthy) people, such as "$(\forall x)(\forall y)(Kx \ \& \ Ky \supset (x$ is small $\& \ x$ has 1 square meter less than $y \supset y$ is small))", can vary with the occasion of use. In a conversation between people in Hong Kong looking to buy a micro-apartment where they can fit all their furniture, 1 square meter may make all the difference between smallness and non-smallness. So an abstract preconception regulating the acceptability of concrete generic preconceptions for "is small" presumably takes a form similar to this:

---

[17] This is not to imply that preconceptions associated with "dog" and related nouns do, when successful, fix an absolute extension for them, even if in a way they may be so intended. See again the text surrounding footnote 28.

In an occasion of use, that already provides a universe of discourse U and a comparison class K included in U, and that may provide members r_1, r_2, etc. of K as cases of small things, and/or members s_1, s_2, etc. of K as negative cases of small things, one may take "$(\forall x)(\forall y)(Kx \ \& \ Ky \supset (x$ is small & x has a size inferior by 1 u to y $\supset$ y is small))", where u is a relevant size unit, as a generic principle holding in the occasion of use, provided just that the difference between the r_i with the greatest size and the s_i with the smallest size is greater than 1 u.

Note that "$(\forall x)(\forall y)(Kx \ \& \ Ky \supset (x$ is small & x has a size inferior by 1 u to y $\supset$ y is small))" is logically equivalent to "$(\forall x)(\forall y)(Kx \ \& \ Ky \supset (\sim$ y is small & x has a size inferior by 1 u to y $\supset \sim$ x is small))", which will thus be a concrete generic preconception in play in those occasions of use where its equivalent is in play.

It is also natural to postulate that "small" has associated with it an abstract preconception regulating the acceptability of concrete conditional instructions for the fixing of extension/anti-extension pairs relative to particular occasions of use. It would be something like this:

In an occasion of use, that already provides a universe of discourse U and a comparison class K included in U, that provides members r_1, r_2, etc. of K as cases of small things, and/or members s_1, s_2, etc. of K as negative cases of small things, and that provides some general principle(s) "$(\forall x)(\forall y)(Kx \ \& \ Ky \supset (x$ is small & x has a size inferior by 1 u_1 to y $\supset$ y is small))", "$(\forall x)(\forall y)(Kx \ \& \ Ky \supset (x$ is small & x has a size inferior by 1 u_2 to y $\supset$ y is small))", etc., a principle of this form is acceptable:
If there is a unique pair $<E, A>$ of subsets of U which are mutually exclusive and jointly exhaustive over U, and are such that
- r_1, r_2, etc. are in E,
- everything in K that has a size inferior to something in E is in E,
- everything in K that has a size superior by 1 u_1 to something in E is in E,
- everything in K that has a size superior by 1 u_2 to something in E is in E, etc.
- s_1, s_2, etc. are in A,
- everything in K that has a size superior to something in A is in A,
- everything in K that has a size inferior by 1 u_1 to something in A is in A,
- everything in K that has a size inferior by 1 u_2 to something in A is in A, etc.

- *U-K* is included in A[18],

then *<E, A>* is the extension/anti-extension pair of "is small" relative to the occasion of use.[19]

If something like this principle underlies the fixing of a reference for "small" relative to an occasion of use, then in occasions of use where a unique pair *<E, A>* satisfies the antecedent of the concrete conditional instruction in operation, a reference for "small" (in the sense of an extension/anti-extension pair) gets fixed;[20] in other occasions of use, no reference is fixed.

Williamson (1999) has argued that, if some mechanism fixes the extension of a predicate F, then the same mechanism, by default, fixes an anti-extension for F: the set of things that (are in the universe of discourse and) are not in the extension of F; as Williamson puts it, fixing the extension and the anti-extension of F are not "independent achievements" (p. 509). This is a reasonable idea, and is not contradicted by the just postulated mechanism for the fixing of a reference for "small" relative to an occasion of use. Note that no proposal is made that there is a set of preconceptions giving intuitively jointly necessary and sufficient conditions for membership in the extension of "small" (unlike what happened in the case of "dog"); and no proposal is made that there is an independent set of preconceptions giving intuitively jointly necessary and sufficient conditions for membership in its anti-extension. The extension/anti-extension pair is fixed (when it is) in a "coordinated" fashion, i.e. when the positive and negative paradigm preconceptions and the generic preconceptions are jointly satisfied by a pair of classes.

If someone wished to use Williamson's remark as the basis for an objection to the mechanism postulated here, he might try to argue that there is some independent reason to think that the extension of a predicate must in successful cases be fixed by a "non-coordinated" mechanism, and that its anti-extension must only then be fixed by default.

---

[18] I assume (somewhat artificially) that everything that is not in the comparison class is not small in the sense relevant to the occasion of use, and thus that it is in the anti-extension of "small".

[19] There are surely preconceptions about "small" (and as we will see, also about "dog") other than the paradigm and generic preconceptions postulated in the text, and thus the hypothesized conditional instructions are simplifications.

[20] As noted above, reference-fixing conditional instructions may often be analytic or *a priori*. In particular, the preceding abstract principle and its concrete instances may well be analytic or *a priori*.

However, I see no reason why this should be so in general, and the apparent possibility of the mechanism just postulated in the text goes against this radical thesis. Furthermore, there are special reasons to think that the thesis is false for actual typical degree adjectives. As emphasized by Sainsbury (1990), a typical degree adjective generally comes together with an antonym (e.g. "big" in the case of "small"), and the antonym is analytically connected with a sufficient condition for membership in the anti-extension of the original adjective (e.g. "If something is big, it's not small"). Assuming only that positive paradigm preconceptions play a role in fixing the extension of each lexically different degree adjective by giving sufficient conditions for membership in it, it follows that the positive paradigm preconceptions corresponding to two antonyms F and G must be "coordinated" in some way if the predicates are to possess suitable extension/anti-extension pairs, for there should be no overlap of the set of positive paradigms of F (which should be in the extension of F) with the set of positive paradigms of G (which should be in the anti-extension of F).

It can already be seen from what has been said so far that the present picture implies that the semantic rules for "is small" do not per se (or even in conjunction with uncontroversial facts about the populations of Smalltown and Nonsmalltown) dictate that (B_{small}), (C_{small}) or (D_{small}) must be accepted as true. (B_{small}), (C_{small}) and (D_{small}) are merely preconceptions, analogous to the non-analytic paradigm and generic principles that have a role in (implicitly) fixing the reference of natural kind predicates. This is consistent with the intuition, mentioned in section 2, that (B_{small}), (C_{small}) and (D_{small}) are not really analytic or dictated as of obligatory acceptance by the semantics of "is small".

4. The fixing of reference in regular occasions of use.

The classical logic and semantics of the logical expressions, in particular of the quantifiers, requires essentially one thing of the interpretation of a predicate: that the interpretation fix an extension and an anti-extension for the predicate which are mutually exclusive and jointly exhaustive over the previously given universe of discourse. This will not be sufficient by itself for the predicate to be endowed with an intension, but in some cases the fixing of an extension may determine the fixing of an intension if some additional factors are in play. In many occasions of use, the (concrete) paradigm and

17

generic preconceptions and conditional instructions for a sorites susceptible degree adjective or scalar noun provide a classical extension/anti-extension pair for them, and perhaps they are also enough to fix an intension.

Let's consider the following example. A couple of modest income are looking to buy an apartment, and they are having a conversation in which they will try to decide which one to buy. There aren't that many options. Their choice is reduced to four apartments, with sizes of 65, 70, 100 and 105 square meters; call them "A65", "A70", "A100" and "A105". We may take this set K of apartments as the relevant comparison class for "small" in the conversation. Given their standards in the situation, A65 counts as small for them, and A105 as not small. Also given their standards, they take it that 5 square meters don't make a difference as to whether an apartment is small or not. We may also postulate that the following concrete conditional instruction (licensed in this occasion of use by the last abstract preconception of section 3) is in operation:

> If there is a unique pair $<E, A>$ of subsets of the universe of discourse U which are mutually exclusive and jointly exhaustive over U, and are such that
> - A65 is in E,
> - everything in K that has 5 square meters more than something in E is in E,
> - A105 is in A,
> - everything in K that has 5 square meters less than something in A is in A,
> - U-K is included in A,
> then $<E, A>$ is the extension/anti-extension pair of "is small" relative to the occasion of use.

Under all these assumptions, the conditional instruction and the paradigm and generic preconceptions in play fix a classical extension/anti-extension pair for the predicate "is small": its extension in the occasion of use is {A65, A70}, and its anti-extension is the set containing A100 and A105 plus any other thing that is not in K. Extension and anti-extension are mutually exclusive and jointly exhaustive over the universe of discourse relevant in the conversation.

Perhaps also a (classical) intension for "is small" is fixed in the mentioned occasion of use with the help of the mentioned principles and others that might be plausibly postulated. Given that a classical extension/anti-extension pair has been fixed, this pair in

turn may induce in the obvious way a pair of scales of associated numbers (measuring sizes in square meters, in this case), which we may take simply as a pair of sets; in the example, the pair of scales would be <{65,70},{100,105}>. Then an intension for "is small" in the mentioned occasion of use might be computed with the help of this principle: the extension of "is small" over the previously given universe of discourse U in a world w contains an element a of K just in case a's size in w is less than or equal to one of the sizes in the first scale, {65,70}; and the anti-extension of "is small" over U in a world w contains an element a of K just in case a's size in w is greater than or equal to one of the sizes in the second scale, {100,105} (and it also contains everything that is not in K). The resulting intension puts A100 in the extension of "is small" in worlds in which, say, its builder changed the architect's plans and gave it a size of just 68 square meters.[21]

An occasion of use of a degree adjective or scalar noun may presuppose a comparison class that is even more reduced than the comparison class in the apartment example, and that does not create any obstacle to the fixing of a classical extension/anti-extension pair. If we are talking about a figure such as the following

,
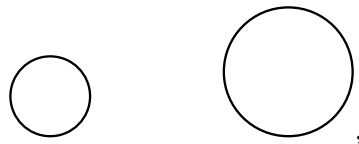
in most occasions of use we will be able to say felicitously and truly things like "The small circle is to the left", "There is a small circle to the left", "The circle to the left is small", "The non-small circle is to the right", etc.[22] In occasions of use like these, it is clear that the extension of "small" relative to the universe of discourse will have been taken to be the set consisting of the circle to the left, and its anti-extension will have been taken to contain the circle to the right. In these cases, the paradigm preconceptions in play

---

[21] This mechanism is of course very sketchy and leaves questions unanswered. In worlds w where one of the apartments of the given 4-element set has a size in the open interval (70,100), the mechanism doesn't assign a classical extension/anti-extension pair to "is small" in w. This seems tolerable and not incompatible with usual possible worlds semantics, which contemplates intensions which are partial functions. The description in the text is not meant as a complete one, but only as indicative of the direction a more complete description might take.

[22] These two-element comparison classes (and figures similar to the one in the text) are considered in Klein (1980). See also Kennedy (2007).

suffice to fix the extension/anti-extension pair, given that no appropriate generic preconception will enter into conflict with them. In general, mutatis mutandis the same can be said of cases in which, as in the apartment case or the two circles case, the comparison class is clearly divided into two mutually exclusive and jointly exhaustive subsets consisting, respectively, of positive paradigms and/or individuals that can be "reached" from the positive paradigms by generic preconceptions, and of negative paradigms and/or individuals that can be "reached" from the negative paradigms by generic preconceptions.

A great number of uses of typical degree adjectives do not seem to presuppose large, sorites-prone, or even not clearly divided comparison classes. Many of them, on the contrary, seem to be what we might call *contrastive* uses: they seem to presuppose precisely a comparison class consisting of two clearly separated sets of objects, not infrequently sets of just one element, that need to be forcefully contrasted for the conversational purposes of the situation. Consider the italicized degree adjectives in the following passages, all taken from the first page of a widely used reference work:

> **abbess.** (…) In the Middle Ages *wide* powers were claimed by some abbesses, but the Council of Trent put an end to most special prerogatives.

> **Abbot, George** (1562-1633), Archbishop of Canterbury from 1611. (…) he won James I's favour by his mission to Scotland (1608) (…). As archbishop he was *severe* on Roman Catholics and *partial* to Calvinists at home and abroad. (…) The *strong* line which he took over the Essex nullity suit (1613) won him respect and a temporary popularity. In 1621 he accidentally shot a gamekeeper and his position was considered to have become *irregular*; James decided in his favour and he resumed his duties. He crowned Charles I but had *little* influence in his reign. (Livingstone (2006), p. 1)

It is clearly forced to view the use of "wide" as applied to the powers claimed by some abbesses as presupposing a large comparison class consisting of (classes of) powers that people have claimed, or even of powers that the heads of monasteries have claimed; certainly, no knowledge of such comparison class is required of the reader for the understanding of the sentence. Its use simply seems to presuppose a contrast with the powers of the *other* abbesses who did not claim those same powers. This is made somewhat clearer by the next sentence, in which these powers are called "special", in a use that does not even seem to admit of comparatives. The use of "severe" as applied to Abbot on the Catholics could hardly presuppose an extended class of men or of acts of

severity; presumably Abbot's actions against the Catholics do not rank especially high in the universal classification of acts of severity. The author apparently means to contrast Abbot's attitude toward the Catholics with his attitude toward the Calvinists, as made clear by the next clause. The use of "partial" presumably should be understood along the same lines. The use of "strong" as applied to Abbot's line over the Essex nullity suit is nearly impossible to understand as presupposing a comparison class of several "lines" ordered by strength; the author just means to contrast Abbot's adverse attitude with the favorable attitude of the other side. The use of "irregular" (if it's a use that admits comparatives) seems again not based on a comparison with several positions men (or archbishops) could have, but simply with the position Abbot enjoyed before the shooting incident as an archbishop who had not been involved in any strange circumstances. Finally, the use of "little" as applied to his influence in Charles I's reign is not meant to locate that influence at a low point in a ranking of "influences" of people or Canterbury archbishops, but simply to contrast that influence with the influence he enjoyed under James I, from whose favor he had benefited.

In contrastive uses like these (and the examples could be multiplied at will), there is no obstacle to the fixing of a classical extension/anti-extension pair over the contextual universe of discourse by means of the mechanism of preconceptions sketched above, given that the relevant comparison class is smallish (or even a two-element one) and clearly divided.[23] The ease with which these numerous and useful uses are accommodated

---

[23] As advanced in footnote 10, in yet other non-problematic cases the adjective will have either an empty or a universal extension over the comparison class; i.e., either an (a) or a (b) genericist suboption (in the sense of section 2 above) will be the right option in some special occasions of use. Suppose the comparison class and the universe of discourse are the same, the set of natural numbers; suppose that we take the first ten numbers as (positive) paradigms of small numbers, but we abstain from taking any number as a negative paradigm of smallness; and suppose that we accept the principle "$(\forall x)(\forall y)(x$ is small & $x+1=y \supset y$ is small)". The mechanism of preconceptions postulated above then generates as the extension of "small" the whole set of natural numbers: every number is small under the exacting standards in the situation. (Not unreasonable standards, if we reflect that every number is only greater than finitely many numbers but smaller than infinitely many.) This is a (b) case; analogous (a) cases are also easily imagined. And similar cases can be created with many adjectives for other universes of discourse if we suppose the comparison class to be greatly unrestricted, e.g. when it contains many

without abandoning the presuppositions of classical semantics suggests that, even though other uses are problematic, the linguistic practice involving the employment of sorites susceptible adjectives is sustainable in the face of paradox. If speakers using typical degree adjectives were constantly faced with uses which did seem to create problems for classical semantics or logic, that linguistic practice would probably be hard to sustain. The above examples of uses of adjectives, together with the preconceptions picture of how they obtain classical extensions (and thus of how the utterances in which they appear obtain classical truth conditions), vindicates the plausible idea that an often successful mechanism for the fixing of reference underlies our use of degree adjectives. On the present picture, then, justice is done to the convincing idea that we manage to effect semantically real distinctions between objects with the help of typical sorites susceptible degree adjectives, and even that we do so in a vast number of occasions. Furthermore, the picture does this without postulating an ad hoc non-classical semantics for the logical expressions when they interact with those adjectives. On the picture the intuition is preserved that when we deal with typical sorites susceptible adjectives, we use the classical semantics for the logical expressions. We are simply working under the assumption, however tacit or inchoate, that our linguistic preconceptions fix a classical extension/anti-extension pair for the adjectives, and thus no theoretical hypothesis that the logical expressions operate in a non-classical way on a non-classical extension is called for.

5. The failure of reference in irregular, especially paradoxical, occasions of use.
In the case of names and general terms for natural kinds, substances and phenomena, the Kripkean mechanism of preconceptions described at the beginning of section 3 plausibly

---

merely possible objects. It seems that there could have been towns of all finite numbers of inhabitants. Suppose then that our universe of discourse contains all such possible towns, and that the comparison class is the set of all possible towns. In a perfectly acceptable occasion of use with these features the extension of "is small" will be universal with respect to the comparison class: every town will count as small. By analogous arguments, one could argue that in some occasions of use in which the comparison class is greatly unrestricted every man counts as bald, no man counts as tall, every man counts as poor, etc. (Perhaps occasions of use of this kind have motivated the proposal of genericist theories; but I'm unaware that they have.)

fails to generate extensions (and intensions) in some cases. These include cases in which the preconceptions enter directly into contradiction with relevant truths that are not preconceived (and they may include non-conflictive cases in which they are nevertheless insufficiently specific to generate a unique extension). Similarly, in the case of typical sorites susceptible degree adjectives and scalar nouns the mechanism of preconceptions described later in section 3 fails to generate extensions in cases in which the preconceptions are in conflict with a truth of the form of (A), with the content that a sorites series can be drawn from the comparison class; and the preconceptions also fail to generate extensions in some cases in which no true sentence of the form of (A) is in sight, but they are nevertheless insufficiently specific to divide the comparison class (and hence the universe of discourse) uniquely into two mutually exclusive and jointly exhaustive subclasses. I will begin this section explaining and illustrating these failures.

I take it to be fairly uncontroversial that in some cases the descriptive identifications and conditional instructions by means of which an attempt is made to fix a reference for certain names fail to do so. A well known example is "If there is exactly one planet causing the perturbations in the orbit of Mercury, then "Vulcan" refers to that planet", which fails to fix a reference for "Vulcan". It seems also most reasonable to think that, even though in a vast number (or even a majority) of cases of terms for natural kinds, substances and phenomena, the initial linguistic preconceptions and conditional instructions about a predicate successfully fix an extension (and an intension) for it, in at least some cases they fail to do so, just as in the proper name case.[24]

Consider "If there is exactly one set of which most of a, b, c,… are members and such that the things that are in it are exactly the instances of a certain disease, then the extension of "is an instance of madness" is that set". Here "Most of a, b, c,… are instances of madness" and "The things that are instances of madness are exactly the instances of a certain disease" can be viewed as initial linguistic preconceptions about "is an instance of madness". If the former mentions paradigms of all traditional kinds, the two preconceptions are not jointly satisfied, for it has turned out that there are many kinds

---

[24] It is natural to conjecture, as we did with degree adjectives, that the vast number of cases in which the mechanism of preconceptions fixes a reference for terms for natural kinds makes the linguistic practice involving them sustainable even in the presence of problematic cases.

23

of equally frequent traditional paradigms, which are instances of diseases or other phenomena that don't have anything to do one with the other—epilepsy, tetanus, dementia praecox, delirium tremens, all kinds of so called neuroses and psychoses, etc. Now, of course normal people at a relatively pretheoretical level of use do not sense any problem preventing sentences containing "madness" or "mad" to have truth values. And it seems to me that, after exposure to the theoretically varied nature of the diseases or other phenomena that prompt attributions of madness, most people tend to reject the generic preconception "The things that are instances of madness are exactly the instances of a certain disease" and stick to the preconception to the effect that at least a majority of paradigm cases must fall under the extension of "madness" and "mad" (Charles Manson, Dr Samuel Johnson[25], my extremely agoraphobic neighbor, and so on).

However, on what seems to me to be the most reasonable view after reflection, there is actually no fact of the matter as to whether, e.g., Manson, Dr Johnson, my neighbor, etc. are instances of madness, or there is no such thing as an instance of madness among them; thus no extension is fixed for "is an instance of madness", as there isn't even a fact of the matter whether its extension should contain them or not. Of course we may use "madness" with a definite extension if either we stick to the preconception that most people in our paradigms list are instances of madness but accept that madness is not a (common) disease; or if we stick to the preconception that the instances of madness are precisely the instances of a certain disease but accept that it's not a disease exemplified by most people in the list, in which case it's false that most of them are instances of madness and "is an instance of madness" has a reduced extension, possibly empty, consisting of the instances of a single disease, possibly an imaginary one. But regardless of any initial inclination we may have, reflection suggests that these options ultimately require arbitrary decisions not justified by preexisting usage.

In particular, if we decide to stick to most of our paradigm preconceptions, it is unclear that we can appeal to any principle determining exactly which majoritarian subset of these preconceptions we should stick to. And even if there is such a principle (e.g., if for some reason "the" principle is to stick to *all* of our paradigm preconceptions), once we abandon the idea that most instances of madness must be instances of a common

---

[25] A well-known case of a personality with extremely obsessive-compulsive habits.

disease, it becomes unclear how to evaluate new cases for membership in the extension of "madness", and thus how to obtain a determinate extension merely from the paradigms. Is "the" general principle to include in the extension all the new cases which exhibit the same descriptive symptoms (assuming we can specify these) as the initial paradigms? Is "the" principle to include all the new cases which fall under one of the diseases or other phenomena exemplified by the initial paradigms? Is it something else? Of course, we may revert to sticking to the generic preconception to the effect that the instances of madness ought to be precisely the instances of a certain disease, and then probably to considering "madness" as naming some sort of imaginary disease having no real instances. But this seems no more compulsory than any of the paradigmatist options. The most reasonable stand seems to be to acknowledge that "madness" is in some way defective, and that the reason is that its preexisting semantics together with its preexisting associated preconceptions fail to fix an extension for it in the presence of a conflict they were not designed to cope with.

A crucial proposal of this paper is that, provided we accept that typical sorites susceptible degree adjectives and scalar nouns are governed by something like the mechanism of preconceptions of section 3, they fail to have a reference (a classical extension/anti-extension pair) in occasions of use in which the preconceptions are in conflict with a truth of the form of (A), stating that a sorites series can be drawn from the comparison class. Consequently, utterances of usual sentences containing typical sorites susceptible degree adjectives and scalar nouns in such occasions of use will lack truth conditions;[26] these are *paradoxical* occasions of use. The sorites reasoning makes explicit the existence of a conflict between, e.g., the truth (A_{small}), on the one hand, and the paradigm preconceptions (B_{small}) and (D_{small}) and the generic preconception (C_{small}) on the other, as uttered or considered in a paradoxical occasion of use such as the one described

---

[26] Perhaps some utterances of sentences containing sorites susceptible predicates in some irregular occasions of use have truth conditions, e.g. some where the predicates are in the scope of locutions of propositional attitude.

in section 1.[27] We can ask again: does preexisting usage determine that some of these sentences are true while at the same time the others are false? Is it the generic preconception that is false, or is it some of the paradigm preconceptions? (Or is it the case that we have been under some illusion that classical semantics and logic govern our use of "small"?) Needless to say, the conflict is unresolved, as reflected in the existence of genericist and strongly nihilist theories, even though, as noted in section 1, there is some initial intuitive pressure for paradigmatism. The most reasonable view seems again to be that "small", as used in paradoxical occasions of use, is defective, as its semantics and associated preconceptions are not enough to get an extension for it in the presence of the unexpected sorites conflict.

Despite the by now predictable initial intuitive pressure for paradigmatism, the sorites case is one in which it is particularly clear that paradigmatism is not the right option. It is not only that, as in the case of "madness", no paradigmatist option for obtaining a full extension from the paradigms seems singled out by preexisting usage, but also that all standard paradigmatist options seem clearly false after some reflection (as noted in section 2). Abandoning (C_{small}) means either postulating and ad hoc semantics or logic for the logical expressions, or else accepting the negation of (C_{small}) as classically understood, and hence the truth of the corresponding optimistic, and so hard to believe, existential quantification. One virtue of the present picture is that it explains in a simple way why this existential quantification is so hard to believe. In all probability there is no further preconception that provides for the determination of the sharp cut-off point that is needed in this case; hence abandoning (C_{small}) does not provide any way of assigning an extension to "is small". The presumable scarcity of preconceptions, and especially the inexistence of a preconception providing for the determination of needed sharp cut-off points, explains our natural repugnance for optimism, and even implies that it is false as a matter of fact, at least if we further accept that sharp cut-off points could only be determined by some feature of either the meaning or the non-analytic linguistic preconceptions about a predicate. The present proposal thus satisfies in a very strong

---

[27] In speaking of (B_{small})-(D_{small}) as sentences *in conflict*, or as elements of *reasoning*, etc., I am of course not implying that they do after all have a truth value. They have those properties roughly in the same sense that schemata can be inconsistent or are usable in schematic reasonings.

sense the desideratum that a picture of the sorites phenomenon should not be optimistic. More generally, the picture has the welcome implication that paradigmatist options as a group are not really semantically superior to genericism, despite initial appearances.

Many other kinds of predicates besides degree adjectival predicates have been claimed to be sorites susceptible, including natural kind predicates. For example, the following has been claimed to be a compelling (A)-(D) set, where the quantifiers range over a greatly unrestricted universe of discourse containing billions of particle aggregates, n is some huge number, "Rigo" is the name of a dog, and "Molly" the name of a single molecule of some sort:

> (A_{dog}) $(\exists x_1)\ldots(\exists x_n)(x_1$ results from Rigo by the removal a single molecule & x_2 results from x_1 by the removal a single molecule & … & x_n results from x_{n-1} by the removal a single molecule & Molly results from x_n by the removal a single molecule);
> (B_{dog}) Rigo is a dog;
> (C_{dog}) $(\forall x)(\forall y)(x$ is a dog & y results from x by the removal a single molecule $\supset$ y is a dog);
> (D_{dog}) ~Molly is a dog.

If these are real paradoxes, the present picture suggests that the solution for them may lie in acknowledging that, while the more natural preconceptions associated with a natural kind predicate (mentioned in section 3) are in some sense designed to fix an absolute extension for it, they may only manage to fix one over the tame universes of discourse which are presumably quantified over in those preconceptions. If (B_{dog}), (C_{dog}), and (D_{dog}), for example, are further preconceptions associated with "dog", then, in occasions of use involving a universe of discourse containing billions of suitably weird aggregates of particles, the preconceptions associated with "dog" will not be jointly satisfied, "dog" will not get an extension and (B_{dog}), (C_{dog}), and (D_{dog}) will all lack a truth value. Nevertheless, the natural preconceptions for "dog" mentioned in section 3 surely fix an extension for it if they quantify, as they presumably do, over more usual universes of discourse, that contain only normal objects and don't contain billions of weird aggregates of particles. Even if sorites conflicts create obstacles to the fixing of an extension in weird occasions of use involving greatly unrestricted universes of discourse, a vast majority of occasions of use involving "dog", and other non-scalar nouns for natural

kinds, artifacts, etc. will be non-problematic occasions of use (similarly for non-degree adjectives like "canine"). Space limitations prevent detailed examination of these predicates here.[28]

There are also reference failures in some cases in which no true (A) sentence is in view, now due simply to insufficient specificity of the paradigm and generic preconceptions in play. These will be *non-paradoxical* but still irregular occasions of use. Think of this variant of the apartment example. A different couple (with a less modest income) must choose an apartment from a set *K* containing 65, 70, 100, 130 and 135 square meters apartments (A65, A70, A100, A130 and A135). A65 and A135 count clearly as small and not small for them, respectively, and 5 square meters don't make a difference for them as to whether an apartment is small or not. The relevant preconceptions then imply that A70 is small, and that A130 is not small, but fail to imply that A100 is either in the extension of "small" or in its anti-extension. In a case like this, even though there is no paradox, it is most reasonable to think that the predicate "is small" fails to have a uniquely determined reference, for there seems to be no

---

[28] Another case that I can only mention cursorily is that of "appearance" predicates like "looks red (to John)". Such a predicate is often thought to give rise to a sorites paradox when the relation in the relevant (A) and (C) sentences is "looks the same in color (to John)". Again the present picture suggests the possibility that "looks red (to John)" fails to get an extension over universes of discourse that contain suitable sorites series of color patches, while it gets an extension in tamer universes. However, it is also quite possible that this case is in fact like other related cases which sometimes are thought to be sorites paradoxical but are not really so. We could train a pigeon to peck at big heaps of seed and to refrain from pecking at small heaps. Substitute "is pecked at (by the pigeon)" for "F" in (B)-(D) and "is indiscriminable for pecking purposes (by the pigeon)" for "R" in (A) and (C), and think of n as some suitably large number. Here the relevant (A) sentence seems simply false (while "is pecked at (by the pigeon)" does get an extension). For any sorites series $h_1, h_2, \ldots, h_n$ there will be some number *i* of seeds for which the pigeon will eventually fail to peck at h_{i+1}, after having pecked at h_i, and thus it will after all discriminate in some way between the sizes of h_i and h_{i+1}. In the same way, the camel's back will break with a number *j*+1 of straws even though it did not break with *j* straws. (These "cut-off" numbers will vary from circumstance to circumstance, but this doesn't show that the predicates involved have any interesting semantic peculiarity; it only shows that the constitutions of the pigeon and the camel suffer minute changes from circumstance to circumstance.)

preconception determining that A100 should be either in its extension or in its anti-extension.[29]

In both irregular paradoxical and irregular non-paradoxical occasions of use, an impression is created that some objects far away from the positive and negative paradigms along the relevant dimension of comparison are "borderline cases", objects that fall outside the extension and anti-extension of the adjective in question. The explanation of this impression according to the present picture is that these objects, besides being neither positive nor negative cases of application of the adjective, are not even preconceived as paradigms, and are psychologically far away from them along the relevant dimension of comparison.[30] The objects in question are not "borderline cases" in the sense that they fall outside the extension and anti-extension of the adjective while the paradigms and objects easily reached from them by the generic preconceptions fall inside. There is of course no extension/anti-extension pair in the problematic cases, and so no "borderline cases" in the mentioned semantic sense.[31] Nor are there "borderline cases" in

---

[29] There may also be cases in which the preconceptions about a term for a natural kind are insufficiently specific to generate a unique extension, even if they don't enter into conflict with any truths.

[30] A speaker who considers successively the items in a sorites series will presumably reach a point where, e.g., though he is (already baffled but) ready to count as small a certain town t_i, he is baffled and not ready to count t_{i+1} as small, and he may perhaps in some cases be (baffled and) ready to count t_{i+1} as not small. Contextualist theorists (see footnote 7) may explain these baffled shifts as arising from subtle context changes. The present theory postulates that the judgments in question lack a truth-value, and that presumably the shifts (and the bafflement) of the speaker are to be explained by the truth-value gaps rather than by any concealed context change.

[31] The notion of a "borderline case" has been closely associated with attempts to characterize vagueness. It is by now generally accepted that the existence of "borderline cases" in a semantic sense could not characterize what it is for a predicate to be vague, for, assuming that "borderline cases" in the semantic sense were possible, one could define predicates with precise cut-off points separating the positive and negative cases from the "borderline", thus predicates with "borderline cases" but not sorites susceptible. An alternative, and by now apparently popular proposal is to say that a vague predicate is a "boundaryless" predicate (in the sense of Sainsbury 1990), i.e. one for which there is simply no semantically determined precise border separating the positive and the negative cases from the "borderline". But think of the occasion of use in the second apartment example, and imagine that we introduce an adjective "small*" stipulating that the sentences resulting from replacing "small" with "small*" in the paradigm and generic preconceptions of the original example are to be taken as of

an epistemic sense, i.e., objects that fall either in the extension or in the anti-extension but are not known to fall in any of the two places. There are "borderline cases" in a purely psychological sense.

Normal speakers at relatively pretheoretical levels of use tend strongly to believe that utterances containing degree adjectives, of both paradigm and generic sentences, have truth values even in irregular occasions of use; the thought of an extension gap and accompanying truth-value gaps is very hard to elicit from them. This fact was of course to be expected in speakers not exposed to the sorites paradox and to sufficient theoretical reflection on it, and constitutes no problem at all for the dual picture of this paper. This case is no different from the case of failed natural kind terms, in which the plausible lack of reference and of truth conditions is nevertheless accompanied by a resolute acceptance by normal speakers of both the relevant generic and paradigm preconceptions. It is important, however, to stress the fact that, under the assumptions of section 1, this resolute acceptance would be hard to explain if we did not have at hand an often successful reference-fixing mechanism for natural kind terms that plausibly underlay normal people's tacit understanding of how these terms come to have a reference (when they do). Analogously, in the case of degree adjectives this is precisely what is provided by the description of the mechanism of preconceptions in section 3.

A further psychological factor that may contribute to the resoluteness with which normal speakers accept the relevant preconceptions is what we may call the *closeness* phenomenon. When we are confronted with a compelling (B)-(C)-(D) set in a particular paradoxical occasion of use, and in fact even when we are confronted with a compelling (B)-(C)-(D) set in an irregular but non-paradoxical occasion of use, there are potential very close regular occasions of use in which the *same* paradigm and generic sentences work as preconceptions, but generate a classical extension/anti-extension pair. The

---

required acceptance by the semantics of "small*" (and no other principle governs its semantics). Then, in a clear sense, no semantically determined precise border exists separating the positive and negative cases of apartment smallness* from the borderline (we don't stipulate jointly necessary and sufficient conditions for membership in either the extension or the anti-extension of "is small*"). And yet there is no sorites susceptibility, because no sorites series is in sight in the occasion of use. Assuming that sorites susceptibility is a necessary condition on vagueness, it follows that "boundarylessness" does not characterize it.

existence of these close occasions of use may even divert to some extent our attention from paradox or irregularity in general. Let's go back to the (A$_{small}$)-(D$_{small}$) set of our initial example of section 1 and its described original occasion of use. A very close occasion of use is one in which the comparison class consists exclusively of Smalltown and/or a few tiny towns "reachable" from it with the help of the generic preconception(s) in play in the original occasion of use, plus Nonsmalltown and/or a few big towns "reachable" from it with the help of that(those) same generic preconception(s). In the new occasion of use the comparison class provides no sorites series, and the paradigm and generic preconceptions in play (the same as in the original occasion of use) suffice to divide the comparison class (and hence the universe of discourse) into two mutually exclusive and jointly exhaustive subclasses. Similarly, in the second apartment example, which was irregular but not paradoxical, a very close occasion of use is one in which the comparison class consists exclusively of the 65 square meters apartment and/or the 70 meters apartment, plus the 135 meters apartment and/or the 130 meters apartment. Here again there is no sorites series, but neither is there any psychological "borderline case", and the paradigm and generic preconceptions in play suffice to divide the comparison class (and hence the universe of discourse) into two mutually exclusive and jointly exhaustive subclasses. In general, the strong tendency to believe that paradigm and generic sentences, and other sentences, are true even in irregular occasions of use, may to some extent be reinforced by the existence of closely similar and simpler occasions of use of the basic contrastive, regular kind described in section 4.[32]

---

[32] In unpublished work, Peter Pagin has proposed a much more ambitious contextualist thesis, according to which in most contexts of use of a sorites susceptible predicate, some contextual factor restricts the domain of quantification so that a classical extension/anti-extension pair over the restricted universe is delivered for the predicate, and in such a way that sentences involving the predicate retain their intuitive truth value. However, it seems implausible that any factor determining contextually the domain of quantification works in such fine-tuned coordination with the mechanisms for predicate reference-fixing. For one thing, it is unlikely that any contextual factor determines two unique sharp cut-off points, between the extension of the predicate and the intermediate excluded cases and between these and the anti-extension. Pagin seems to agree with this, and to propose his theory not as a theory of the determination of reference, but as a theory about the determination of a class of extension/anti-extension pairs that might all equally well play the role of referents for a sorites predicate in paradoxical occasions

In my view, one main strength of the picture of this paper is the understanding it can provide of the fact that, even after reflection on paradox, people tend to give a preference to their intuitions on the truth value of paradigm preconceptions over their intuitions on the truth value of generic preconceptions—the phenomenon of the preference for paradigm intuitions, for short. Most theories of the sorites paradox have taken the preference for paradigm intuitions at semantic face value, and thus have assumed that paradigm preconceptions must be true. However, as argued in section 2 and recalled a few paragraphs ago, reflection suggests that standard paradigmatist theories of the sorites paradox are all false. I take this as a datum, and I think that what is needed is a theory that, while implying the falsity of paradigmatism, can at the same time explain its appeal. The picture in this paper does precisely that, when it is supplemented with a number of allied plausible conjectures about the psychology of paradigm beliefs.

The preference for paradigm preconceptions has several plausible sources in the reliance on paradigms for reference-fixing and its associated psychology. Probably paradigm preconceptions are psychologically more basic than generic preconceptions in many respects. For example, it is well known that the inclination to classify under a common predicate certain paradigms or prototypes develops earlier in children than any implicit generic idea as to how one should expand the extension of the predicate starting from the paradigms. This inclination is also probably of more adaptive or practical value at pretheoretical levels of use than the development of any generic idea; one can classify and contrast particular objects by means of paradigm preconceptions (even if these turn out to contain semantically defective predicates), thus getting a means to influence and react to one's hearer's responses to particular objects, but one cannot do that merely with generic preconceptions.

At a more theoretical level of use, and especially after exposure to paradox or conflict, other factors may contribute psychologically to the preference for paradigm preconceptions. It is clear that *stipulatively* rejecting the paradigm preconceptions would

---

of use. However, I doubt that even such a class can be determined in paradoxical cases: in the (A_{small})-(D_{small}) example, it is implausible that there is a biggest town that will not appear in the extension of any of the extension/anti-extension pairs that might all equally well play the role of referents of "small". (For discussion of Pagin's theory I am indebted to Sven Rosenkranz.)

involve a more radical departure from established usage than stipulatively rejecting the generic preconceptions. We might, for example, fix a generic principle determining the extension of "madness" by stipulation, but we could not stipulate paradigm preconceptions about "madness" to be false without suppressing our ability to effect distinctions with the help of "madness"; similarly, we might fix cut-off points for "small" by stipulation in irregular occasions of use, but we could not stipulate paradigm sentences about "small" to be false without suppressing our ability to effect distinctions with the help of "small". There is also the presumable fact that occasionally, after the emergence of paradox or conflict, and without the help of explicit stipulations, linguistic practice settles on some generic principle that is compatible with the original paradigm preconceptions. The psychologically evident possibility of stipulations or implicit choices of generic principles compatible with the original paradigm beliefs may well cause to some extent the preference for paradigm preconceptions. But of course, this possibility does not imply that preexisting usage does, or even can, single out non-arbitrarily any generic principle that fixes the extension of a problematic predicate.

These psychological factors are presumably in operation whenever a reference-fixing mechanism relies heavily on paradigm preconceptions. Other plausible psychological factors contributing to the preference for paradigm preconceptions are specific to the use of degree adjectives. Paradigm preconceptions about these adjectives are often less variable than generic ones, even with respect to the same comparison class. Presumably the 65 meters apartment will count as small under any standard with respect to all (or most) comparison classes in which it is the smallest apartment; but a generic preconception with the intuitive content that 5 meters don't make a difference as to smallness will vary widely in perceived truth value even with respect to a fixed comparison class where the 65 meters apartment is the smallest apartment. Other paradigm preconceptions are stable even across all occasions of use of a predicate; for example, a man with 0 hairs counts as intuitively bald in all occasions of use.

It seems to me that together, all these probable psychological factors provide considerable support for the thesis that the preference for paradigm preconceptions does not have a semantic root. If we take it as a datum that paradigmatist semantic theories of the sorites paradox are not determined to be correct by preexisting usage, the existence of

these psychological explanations goes quite a bit of the way toward eliminating the paradigmatist inclination suggested by the preference for paradigm preconceptions.

Finally, I should stress that, unlike strong nihilist theories, the dual picture is not necessarily self-referentially instable. Its proponent says "All sorites susceptible predicates, in paradoxical occasions of use, lack an extension, and all sorites susceptible predicates, in occasions of use in which the mechanism of preconceptions works, have an extension". In order for his utterance to be true, the occasion of use in which he makes it must be one in which the predicates appearing in that sentence have an extension. Do they have an extension in the relevant occasion of use? Assuming that predicates in general have their extensions determined (when they do) by mechanisms of preconceptions related to the ones postulated for degree adjectival predicates and natural kind predicates, the problem is basically the problem of what is the typical universe of discourse presupposed in that occasion of use or similar ones, and of whether the preconceptions associated with the predicates appearing in the sentence fix classical extension/anti-extension pairs for them over that universe. This in turn reduces to the question whether the proponent of the dual picture needs to quantify over things which, in the relevant occasion of use, are neither clear predicates nor clear non-predicates, or neither clear occasions of use nor clear non-occasions of use, etc.

I conjecture that he doesn't need so to quantify. Metaphysical theories often quantify over large universes of discourse. But it's unclear that an appropriate theory of the basic linguistic phenomena surrounding the sorites must be a metaphysical theory. It may be a linguistic theory that doesn't need to quantify over universes of discourse containing inordinately large numbers of things. For example, it might be claimed that some types of sounds emitted by humans in some counterfactual, imaginable or even real cases are neither clear cases of predicates nor clear non-cases, perhaps because they are neither clear cases of words nor clear cases of non-words. But the proponent of the dual picture doesn't need to consider the properties of those sounds, just as a syntactician doesn't typically theorize about sounds or expressions that are not clear words. The dual picture is intended only for things of the type we find in dictionaries, in English and similar languages. In the universe of things it quantifies over, its proponent can assume a clear division between words and non-words, and presumably between predicates and

non-predicates. Related remarks hold for the picture's use of "occasion of use" and other predicates that appear in its formulation. Unfortunately, space limitations again prevent further discussion of this issue in this preliminary presentation.

References.

Cargile, J. (1969), "The sorites paradox", *British Journal for the Philosophy of Science*, vol. 20, pp. 193-202.

Dummett, M. (1975), "Wang's Paradox", *Synthese*, vol. 30, pp. 301-24.

Eklund, M. (2002), "Inconsistent Languages", *Philosophy and Phenomenological Research*, vol. 64, pp. 251-75.

Fara, D. G. (2000), "Shifting Sands: An Interest-Relative Theory of Vagueness", *Philosophical Topics*, vol. 28, pp. 45-81. (Originally published under the name Delia Graff.)

Fine, K. (1975), "Vagueness, Truth and Logic", *Synthese*, vol. 30, pp. 265-300.

Gómez-Torrente, M. (2002), "Vagueness and Margin for Error Principles", *Philosophy and Phenomenological Research*, vol. 64, pp. 107-25.

Gómez-Torrente, M. (2006), "Rigidity and Essentiality", *Mind*, vol. 115, pp. 227-59.

Gómez-Torrente, M. (forthcoming), "Kripke on Color Words and the Primary/Secondary Quality Distinction", in A. Berger (ed.), *Saul Kripke*, Cambridge UP, Cambridge, forthcoming.

Heck, R. G. (2003), "Semantic Accounts of Vagueness", in JC Beall (ed.), *Liars and Heaps*, Oxford UP, New York, pp. 106-27.

Kennedy, C. (2007), "Vagueness and Grammar: The Semantics of Relative and Absolute Gradable Predicates", *Linguistics and Philosophy*, vol. 30, pp. 1-45.

Klein, E. (1980), "A Semantics for Positive and Comparative Adjectives", *Linguistics and Philosophy*, vol. 4, pp. 1-45.

Livingstone, E. A. (2006), *The Concise Oxford Dictionary of the Christian Church*, 2nd rev. edn., Oxford UP, Oxford.

Machina, K. (1976), "Truth, Belief and Vagueness", *Journal of Philosophical Logic*, vol. 5, pp. 47-78.

Sainsbury, M. (1990), "Concepts without Boundaries", reprinted in R. Keefe and P. Smith (eds.), *Vagueness. A Reader*, MIT Press, Cambridge (Mass.), 1996, pp. 251-64.

Salmon, N. (1982), *Reference and Essence*, Blackwell, Oxford.

Schiffer, S. (1999), "The Epistemic Theory of Vagueness", *Philosophical Perspectives*, vol. 13, pp. 481-503.

Soames, S. (1999), *Understanding Truth*, Oxford UP, New York.

Unger, P. (1979), "There Are No Ordinary Things", *Synthese*, vol. 41, pp. 117-54.

Unger, P. (1984), *Philosophical Relativity*, University of Minnesota Press, Minneapolis.

Williamson, T. (1994), *Vagueness*, Routledge, London.

Williamson, T. (1999), "Schiffer on the Epistemic Theory of Vagueness", *Philosophical Perspectives*, vol. 13, pp. 505-17.

Wright, C. (2003), "Vagueness: A Fifth Column Approach", in JC Beall (ed.), *Liars and Heaps*, Oxford UP, New York, pp. 84-105.