The Sorites, Davidsonian truth, and Davidsonian epistemicism version of 9/20/09

I What is the sorites paradox about?

The sorites paradox was originally presented as the inconsistency of the propositions that a single grain is not a heap, that no addition of a single grain to a non-heap turns that non-heap into a heap, and that a millions grains together is a heap. Versions of the sorites apply to, for instance, count-nouns, adjectives, adverbs, and verbs. Sorites sequences can be constructed for "is a chair," "is a tall man," "delicately" and "crushes."

There is reason to think[1] that Eubulides, the originator of the sorites, took the sorites to be making a metaphysical point. The medium-sized objects and pluralities of the common-sense world do not make logical sense, so believing in their existence is incoherent. The theory here presented agrees with Eubulides that the central problem of the sorites is metaphysical rather than logical. The present theory relies on neo-Davidsonian views of predication, kinds, and truth.

There are basically three responses to the sorites:

1) Deny that the sentences are inconsistent, when properly understood, or that the inconsistency has serious consequences. This is the adjusted logic solution.

2) Deny the second premise, and claim that at every point in the progression, a collection either is a heap or is not a heap. The problem is just that we, for various reasons, cannot tell which. This is the epistemicist solution.

3) Deny the conclusion, and claim that in fact there are no heaps, as the argument shows. This is the nihilist[2] solution.

Each of these strategies has had recent advocates. The first two strategies have generated a vast literature of solutions. My excuse for not discussing each in detail is that the field is too vast.

The present theory is an epistemicist account that turns on metaphysical views, borrowed or adapted from Davidson, about predication, kinds, and truth. Being adapted from Davidson, the

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[1] See Wheeler, (1983).

[2] "Nihilism" became the label for views that deny that sentences about medium-sized objects and their properties are true. Unger (1979) and Wheeler (1975, 1979) proposed this view in the 1970s. More recently, Ted Sider and David Braun (2007) and Kirk Ludwig and Greg Ray (2002) have reached similar conclusions.

theory is naturalistic, and eschews language-transcendent concepts. The presentation below owes its inspiration to Vann McGee's conceptualization[3] of the sorites problem in terms of the relationship of usage and extension.

II Usage and Extension

What is the relation between the pattern of application of a predicate within a culture and the extension of that predicate? There are two standard general conceptions of this relation. The "meaning is use" conception takes the content of a predicate to be determined by usage, and takes the referent of a predicate to be a function of its content. The metaphysical realist conception rests on natural segmentations in the world as extensions of predicates. This section sketches both familiar views and outlines their difficulties with the sorites.

a) usage determines extension views

The obvious naturalistic way to assign meaning or content to a predicate is to take the meaning of a predicate to be a function of "use" or "usage," and to take the extension of the predicate to be determined by its meaning. What the members of a culture say when fixes all there can be to the content of a predicate, and therefore all there can be to fixing what entities the predicate is true of.

If the basis of measurement were an idiolect, then, since whatever a person responds to in the same way is a possible extension for a predicate, it would be hard to explain how error is possible. Whatever the individual does in fact apply a term to is a possible extension of that term. Usage theorists therefore must treat the entities that have meaning as cultural objects, and say that the culture determines extensions. That is, there is a function from what some kind of majority of the people say when to whatever meanings predicates have. The truth-conditions of a simple subject-predicate sentence "Fa" are thus given by inclusion or exclusion of the object named by "a" in the counterfactually-determined extension, "is a thing this culture would agree to call `F'." The truth-conditions of the negation of such a sentence, "not Fa" would be given by the counterfactual, "is a thing this culture would agree to call `not F'." In the best of circumstances, even if we imagine that the counterfactuals about what people would say can be made very precise, the truth-conditions of "Fa" and "not Fa" do not exhaust the cases. No

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[3] Vann McGee, presentation at the conference on Truth, University of Connecticut May 15-17, 2009.

dispositional analysis of what it takes for a sentence to be true can be expected to respect bivalence.

The use/usage-is-meaning view of extensions leaves extensions, and so truth, indeterminate. For most of our predicates, no amount of actual application-behavior will select a single extension within the collection of possible objects for which the question whether the predicate applies might arise.[4] No matter how many data-points one has derived from applications of "is a table" no particular complete extension, from among the infinity of psychologically projectible sets that include those data-points, is selected. Thus there are possible (and actual) entities such that it is indeterminate whether that entity falls within the extension of, for instance, "table."

b) metaphysical realist views

For a metaphysical realist, there is a privileged segmentation of the world into kinds. This segmentation is reflected in laws connecting kinds in the segmentation. These natural laws give the essences of the kinds that are the extensions of terms. The laws may be strict or may be Aristotle's "always or for the most part" laws.

Language-learning proceeds by acquaintance with such natural kinds, which brands a given kind with a term. Alternatively, a variety of stories about how evolution has equipped us to get at the kinds or how our language-faculty has as its proper function designating the right kinds are told. A metaphysical realist conception of language and its relation to the extensions of terms is externalist. The patterns of application of the predicate, whether in the individual or in the society as a whole, do not determine the extension. Usage has to have some relation to extension in order for the reference-fixing to occur, but that relation can be minimal.

This kind of externalism allows that, for properties and kinds of objects that are governed by strict laws, there are no genuine borderline cases—either a difficult-to-characterize entity is in the extension or not. A metaphysical realist conception explains the divergence between what one's language-teachers teach and the truth by appealing to a natural division in nature which selects some extensions as appropriate extensions for predicates.

c) Difficulties with the sorites

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[4] This is the point emphasized by Vann McGee in his presentation mentioned above.

c1) extension is a function of use theories

For the meaning is usage theorist who takes extensions to be determined by meaning, the sorites argument shows that for almost every predicate, the meaning or sense of the predicate, if resting on what people say when, does not determine an extension even in familiar and often-encountered cases. Nothing about my culture's history of verbal behavior defines an extension for "chair," in the sense of sorting the world's objects into the chairs and the non-chairs. The set of extensions that accord with actual usage is insufficiently restricted to sort even the actually available objects into the chairs and the non-chairs. An account of meaning as resting on usage rather that nature seems to condemn the usage-as-meaning theorist to incomplete meanings, to multiple truth-values, precisifications, and the like.

c2) metaphysical realists

The metaphysical realist solution seems to address the problem of determining a single extension by assigning that job to nature. However, metaphysical realism has difficulty in application to medium-sized object predicates. If we interpret necessity naturalistically, and treat natural kinds as determined by natural laws, then a segmentation into natural kinds requires that the natural kinds be the subjects of laws. Natural kinds are supposed to have essences that yield necessary truths about when they apply. For natural objects, those essences are expressed in natural laws. But the laws about medium-sized objects and organisms at best admit exceptions. They are loose relative to the laws of physics, chemistry, or even cell biology. The sorites illustrates that, for instance, even though we have a necessary relation of some kind between being a tall man and having an adequate height in meters, there is no lawlike relation that would determine what that height in meters must be.

The basic idea of metaphysical realist accounts of reference, that reference is fixed by divisions in nature, seems to run afoul of the sorites, at least on the assumption that the medium-sized objects of ordinary life exist.[5] Apart from some quite unusual predicates, kinds of medium-sized objects and their properties are intuitively not completely determined by a privileged segmentation in nature. At best, nature sets parameters within which wide variation is possible.

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[5] For the arguments that if natural kinds are taken seriously as expressed by necessary truths, then any alleged kinds whose application cannot be determined by natural laws would not be real kinds, and so would not supply essences for objects, see Wheeler (1975).

For objects such as tables and turtles, if we imagine a particle-by-particle dismantling, there appears to be no objective line at which the entity in question ceases to fall under the extension of "is a table" or "is a turtle."

A realist who does not suppose that there is an objective answer to questions about extensions of medium-sized object count-nouns and properties has to fix logic. Essentially, such realists become usage-theorists about all the predicates of ordinary life. So, super-valuation and logics that, for instance, reject excluded middle fill the gap.[6] Metaphysical realists thus are faced with awkward choices about what to say about medium-sized objects and predicates of them. On the one hand, it would be nice if there really were tables and people. On the other hand, the whole idea that having an essence, i.e. having objective existence and extinction conditions, is required for reality is undermined by medium-sized object-predicates and their vagueness with respect to other families of predicates.

d) Davidson

D1) externalism without natural kinds

Davidson is an externalist about extensions, but does not believe in a privileged, given segmentation. Thus, for Davidson, all kind predicates that actually apply to objects are ontologically on a par. Of course there are electrons; of course there are tables. For Davidson, we learn to apply terms by triangulation, coming to call an object salient both to us and to another by the same term. Davidson characterizes this triangulation and its consequences as follows:

"Ostensive learning works first and best with whole sentences, in practice often represented by what for the experienced speaker are single names, common nouns, adjectives, and adverbs (`Mama', 'Man', 'Come', 'Good', 'Careful'). The child who has no more is still a pragmatist. Once some grammar is in hand, however, separately learned parts can be assembled in new ways, and truth separates from the merely useful or approved. The references of names,

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[6] In effect, supervaluation abandons metaphysical realist selections of a privileged scheme, and supposes that every precisifications is an acceptable extension for a problem term. How the content of a precisification is specified seems to rest entirely on what people say when. Given some kind of realism about "loose" natural kinds, perhaps nature sets parameters for precisifications. How precisification is supposed to work with vague count-nouns and with multi-dimensional predicates like "nice" is a mystery. See Rosanna Keefe's (1998)

the extensions of predicates, the combinatorial devices themselves, are in the hands of teachers and society; truth is not." (Davidson 2005, p 15)

Since there is no privileged segmentation into objects and kinds of objects, there is much latitude in what groups of salient objects are *correctly* called by the same term. Thus, extensions are very much shaped by usage—what people say when can yield sets of predicates that vary between cultures and within cultures over time. Language is a human creation, and human choices select ontology, in a way. Since there is no privileged segmentation, whatever can become salient to humans is a possible partial extension of a single predicate. But of course for the reasons given above in discussing the usage account of extension determination, no amount of such training or decision-making about what to say when will yield a single extension for an individual or for a culture. That is, there is no projection from any finite amount of identification of elements of the set to any particular set. Since Davidson explicitly denies a privileged segmentation, the difficulty is even more transparent.

For Davidson, though, extensions are not functions of the content, in the sense of "content" that would be a projection from usage. The meaning of a predicate is its truth-conditions. Extensions are given by the deflationary-sounding formula, "`Is a dog' is true of an object A if and only if A is a dog." Just as truth-conditions or meanings of sentences are given in homophonic translation, so satisfaction or truth-of conditions, that is, extensions, are given in likewise apparently unilluminating form. So, even though meanings and extensions are learned by imitating usage, the meaning is not identical with the usage. Furthermore, for the reasons given above that usage cannot select a single set on the basis of a finite number of occasions of use, extensions, while *based* on usage, could not be *determined* by usage. Usage is *evidence* for meaning when we are interpreting, but meaning itself is given completely by predicate-clauses in a truth-definition.

Notice that for Davidson, most of what people say using these divergent predicates is true. For Davidson, then, there is an indefinitely large number of overlapping natural kinds, as it were. All the distinct predicate-systems are correct. Given Davidson's externalism, a culture's divergences from another culture means that each culture's entities are therefore real. Objects overlap without being reducible one to the other. Diverse objects can co-exist and overlap

without getting in one another's way. Most importantly, diverse overlapping families of predicates can overlap within a single culture, so that the distinct objects can coincide.[7]

Given Davidson's identification of meaning and satisfaction-conditions, what is it to grasp an extension? The child (or adult) knows the extension of a term in the predicate-clause sense as soon as the word is identified as a predicate with a number of places. Once I know that "amygdule" is a one place count-noun, I know its extension. The extension of "amygdule" is the set of things such that they are amygdules. This "knowledge" of course, doesn't count as knowing the term. Language-learning by ostension is something more than this.

"Ostensive learning" in Davidson's remarks above about a child learning the extensions of predicates by ostensive training should thus be interpreted as "learning to detect elements of" the extension. The child could not learn the extension of a term "F" in the sense that the child would be able to sort the universe into the F and the not-F. No one single set of objects is selected by the training the child has had. Nor is a single extension selected by the training the whole culture has had. What happens in language-learning is that the homophonic formula has been, as it were, upgraded by ostension into an understanding of the term. What has happened in ostensive learning is that the child now has the ability to acquire involuntary beliefs of the form "A is F" (sometimes) in the presence of F's. How can Davidson's truth-definitional account of meaning accommodate understanding?

D2) Davidsonian t-sentences

A t-sentence pairs a *mentioned* or cited sentence with a clause that is *used* to give the truth-conditions of the mentioned sentence. (And likewise for predicate clauses in a truth-definition.) Truth-conditions are given in a language that is understood already, so that it can be used. So we are dealing with the language of a particular person at a time, an idiolect. For example, a Davidsonian is aware that even if I don't know what "amygdule" means, I know that in the mouth of someone who can *use* "amygdule," ' "Fred is an amygdule" is true if and only if Fred is an amygdule' is true just in virtue of my knowing that "amygdule" is a count-noun.

Without some connection to usage, "amygdule" is not part of my language (in Davidson's idiolect sense) so I can't use it. I can only cite it or mention it. The idea is that the

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[7] "Coinciding" amounts to having all the same proper parts. A Davidsonian mereology will thus differ from some standard accounts that define identity as having all the same proper parts. See Aaron Cottnoir (forthcoming).

homophonic t-sentences, unless filled out by a connection with usage, are not being used at all, but rather cited.

For "use" to be literally about a speaker's speaking, the t-sentences have to be about speech-acts or be counterfactuals about what the truth-conditions of possible speech-acts of this person speaking this idiolect would be. So, a truth-theory for a person generates counterfactuals about what the truth-conditions of an infinite number of possible utterances would be. (Analogously for inscriptions.)

Put another way, for a word to be used, it has to be part of the speaker's language. So, a term can only be used if it is understood. So, what can a Davidsonian say about the conditions for a word being understood? It should be clear on reflection that both "use" and "understand" admit of degrees and have vague borderlines.

If I don't understand French and I say "Jacques said that les neiges d'antan sont disparues," I haven't really done indirect discourse. Likewise, when a spy listens in on discussions of nuclear physicists and reports to his superiors what the physicists said, but doesn't know anything about gluons, neutrons or quarks. When he reports to his spy-master "Hashem said that the mass of a neutron is mostly gluon energy, not intrinsic quark mass," he is not *using* all the words in the "that" clause. All he knows about gluons, neutrons, and quarks, is that they are things physicists talk about, and that is not enough for those terms to be part of his language. He is like an illiterate transporting a text.

A speaker needs to know "enough" about the extension of a predicate in order to use the predicate. The spy knows *something* about gluons and the predicate "is a gluon" when he knows that gluons were what physicists were talking about yesterday. That seems inadequate to constitute "understanding" and so inadequate to qualify his utterance of the word as "use." And so, if this speaker utters, "'Fred is a gluon' is true if and only if Fred is a gluon," he has not given the meaning, according to my Davidsonism. But what *is* sufficient for understanding? Do I have to be able to cite the equations that determine the range of the strong force?

As Putnam pointed out some decades ago, a lot of the terms of a person's language, like "is an elm" for Putnam, have only a weak connection to the rest of what we know, and are not cases where we can directly detect items of the extension. We refer to things by referring to the experts who know about the things. What experts say is evidence in the same way that cloud-chamber tracks are evidence. In both situations, we have a kind of indirect access to an

extension. In Putnam's examples, though, the speaker knows that elms are trees, and knows something about trees. There seems to be a difference between my knowing for crossword purposes that a gnu is a kind of antelope without being able to identify one, and my having learned to fill in (correctly) "haggadic" when the crossword puzzle clue is "non-halakhic midrash" when I can't say anything about either "haggadic," "halakhic," or "midrash." I knew what antelopes were, roughly, even though I didn't know that they are members of the genus Connochaietes, of the family Bovidae, of the order Artiodactyla.

Since a Davidsonian is an externalist, the resulting web that constitutes understanding a term is a web of knowledge, not a web of belief. My misconceptions about quarks are not additions to my understanding of the term and ability to use it. If we take a person concept to be the person's opinions and dispositions to identify associated with a kind of thing, our understanding of a term generally differs from our concept expressed by the term.

With a few exceptions, namely the "precise" terms where there are sharp laws connecting predicates of different families, our understanding of the terms we use falls short of necessary and sufficient conditions. I know that cows are domestic mammals with horns used for milk, and can identify cows reasonably well. But sorites arguments and peculiar non-standard cows may baffle me. In particular, sequences of cow-like animals constructed by ingenious subtle changes in a decomposition sorites may leave me unable to determine whether an entity is a cow or not.

How, then, can I give the meaning of a term in my language or in another's? I can understand a term without knowing everything about its extension. Only in very rare circumstances can I give a definition of the term using other predicates I understand. So, the homophonic t-sentence is my only complete and accurate account of the meaning. Given that I understand the term so that my utterance or inscription is a *use,* my t-sentence legitimately gives the meaning in terms available to me. So, my utterance may be analytic in my idiolect, and perhaps analytic in the idiolect of anyone who is using the words in the sentence, but this analyticity does not make the t-sentence trivial.

D3) extensions

The combination of externalism about reference and denial of a privileged segmentation means that Davidson can have objective extensions without supposing that there is a single division of the world into kinds, and so without having to rescue weakly-law-governed entities from the threat of not being really part of what is. For Davidson, all kinds are on a par

ontologically. Some kinds are connected to other kinds by very good laws; others by not so very good, "for the most part" laws or by the kind of very vague generalization that would tell us that tables have to have a fair amount of matter.

Here, then, is what I take to be Davidson's view about extensions and usage:

1) Predicates have extensions. The union of the extension of a predicate and the extension of its negation is the universal set. There is an answer, "yes" or "no" as to whether a given predicate F is true of a given object A, for any A. Given that the meaning of a predicate is given by its truth-condition clause, a predicate's meaning in a sense trivially "fits" what it is true of.

2) Although of course learning a language is finding out *about* the extensions of predicates by learning to detect elements of its extension either directly or indirectly, both learning detection of when they apply and the connections to other truths, no finite amount of observation or training or collation of the culture's application-practices will select a single extension from the candidates for "the extension" of a predicate, at least in general.[8]

3) Learning the extension of a predicate cannot be learning a non-trivial rule using other predicates that determines when a given predicate applies to a given object, in the general case.

4) Extensions of predicates are not generally determinable by determining the extension of another predicate, but are determinate. That is, it can be in principle impossible to determine what the extension of a predicate is for the general case.

Some comment is called for about thesis 1). This view of predicates and their extensions commits Davidson to bivalence. Borderline cases of a predicate P are cases where one cannot tell directly whether P, P is known to depend on nothing but truths from predicates in family Q, and all the relevant evidence from Q predicates is in. Given that there are borderline cases where nothing can indicate to us whether a predicate applies or not, there are sentences that are determinately true or false when those sentences' truth-values are not determinable.

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[8] For the unusual cases where we can give the extension in other terms, such as "prime" and "composite" applied to natural numbers, membership in one or the other of the extensions is not determinable relative to some predicate families applying to numbers. "The number of planets" was once thought to be a prime, for instance. "Prime" and "composite" are only determinable relative to some ways of specifying numbers. This is masked by the fact that there is a procedure, in principle, for converting number-description of the form "the number of F's" to a description for which there is an algorithm for determining whether a number is prime.

Davidson can be an epistemicist without supposing hidden facts or states of affairs making such sentences true. For Davidson, truth is primitive. Sentences are not "made true" by anything. For a variety of reasons,[9] there are no entities corresponding to true sentences. Since there are no truth-makers, and truth is primitive, truths do not have particular chunks of the world or particular environmental incidents to fasten onto.

III Theoretically justified bivalence and Davidsonian epistemicism

Davidson, following Quine, allows that some truths, primarily true standing sentences rather than occasion sentences, are reasonably held to be true in virtue of theoretical considerations. Useful analogies abound in mathematics. Neither usage nor intuition would suggest that among the sub-groups of my siblings there is the null set. Yet it is a theorem that the null set is a subset of every set in order to retain such principles as that everything that is a member of the subset is a member of the superset. Likewise, the idea that for any number, raising it to the zeroth power yields one as value fits no intuitions about what "raising to the zeroth power" means, since the notion is intuitively meaningless. This truth is true because, among other things, n to the mth divided by n to the pth equals n to the m-minus-pth. In both cases, theory demands that a sentence be true. Accepting that truth is harmless in both cases.

Davidson can say the same thing about the thesis of bivalence for sentences using medium-sized object predicates. In cases in which "there is no fact of the matter" there is no importance to the matter either. Just as we run into no practical difficulties in treating five to the zeroth power as equaling one, so we have no practical difficulties in treating borderline cases as being true or false.

For the reasons outlined below, namely the lack of sharp laws connecting families of medium-sized object predicates, it would be expected that cases would arise where a predicate such as "is a tall man" could neither be applied nor denied on the basis of inspection, even though a predicate from another family, "is 1.78 meters tall" could be. Without correlates of sentences, i.e. facts or states of affairs, the phenomenon of vagueness is a case of heteronomic connection.

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[9] Davidson is an advocate of the Slingshot, examined in detail by Stephen Neale, most recently in *Facing Facts*. In any case, facts and other concrete correlates of sentences are suspect on many grounds. There is the problem of binding, which goes back to Plato's Parmenides, there is an implausible population of negative and general facts, and so on.

In the case at hand, sorites arguments, the Davidsonian answer would be that of course classical excluded middle holds for sentences about medium-sized objects. There turn out to be good reasons why, for many sentences, truth is not in principle determinable.[10] Among those sentences are predications which usage does not fix as true or false. So, for example, at every point on a continuum forced march, there is an objective answer as to whether the entity is a tall man, even though there is in principle no way to tell.

Just as in the cases of mathematical truths accepted for theoretical reasons, accepting bivalence in non-semantic[11] predications is harmless. As long as we do not suppose that there are occult facts or other truth-makers the claim that every sentence is true or false, so that "Fred is tall" is true or false, conflicts with no other claims we should wish to make. In previous attempts to explain this view, I have called it "harmless epistemicism." This epistemicism requires no miracles. It just requires that we treat truth, extensions, and meaning as completely given by the relevant clauses in a truth-definition. Meaning is truth-conditions, where that means that beyond "'Fred is a dog' is true if and only if Fred is a dog," there is nothing illuminating and accurate and general to say.

IV What is vagueness without facts?

A presumption of the sorites is that the situation where a man is 1.78 meters tall demands an answer about whether he is a tall man or not. Why is an answer expected? Briefly, we have a datum, a fact before us, specified by "is 1.78 meters tall." In a world in which that fact exists, it must, it seems, be the case either that the man is a tall man or that he is not a tall man.

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[10] Note that exactly this kind of response will address mysteries about future contingencies. Given the truth of quantum mechanics, there are an indefinitely large number of sentences about the future positions of particles, not to mention dogs and walruses, that are in principle undeterminable. But, apart from the requirement that there be truth-makers, that is no reason to think that those sentences are not either true or false. Nothing about fatalism or the shape of time or anything else follows from the simple fact that if I predict that there will be a sea-battle tomorrow, I have already either guessed right or guessed wrong.

[11] Given the existence of the semantic paradoxes, the general claim of bivalence, that every sentence is true or false, may be false. But the restricted claim that sentences attributing predicates to medium-sized objects seems to have everything to recommend it.

But suppose, as Davidson does, that there are no entities corresponding to true sentences, i.e. no facts or states of affairs. Then the truth-conditions of "Fred is 1.78 meters tall" are just that Fred is 1.78 meters tall. The problem with "Fred is a tall man" not being determinable is just that from "Fred is 1.78 meters tall" neither "Fred is a tall man" nor its negation follows by law. So, one can infer neither the sentence nor its negation from the "datum." The point is that the datum is not a given, but is already-conceptualized. The datum is a truth. So why should it be surprising that neither "Fred is a tall man" nor "Fred is not a tall man" can be derived by laws from another sentence, "Fred is 1.78 meters tall?"

What gives rise to puzzlement is the truth that there is nothing to Fred's being tall other than how tall Fred is. So, we think there ought to be a law and there isn't. For well-behaved predicates like "tall," [12] there are indeed some lawlike truths connecting "n meters tall" "taller than" and "tall man." For instance, if Joe is 1.8 meters tall and is a tall man, then any man taller than 1.8 meters tall is a tall man. Height is the only relevant dimension for "tall", which makes it a favorite among sorites theorists. But even though the family of predicates "is n units tall" has lots of connection with the family of predicates "is a tall F", the "is a tall F" family does not reduce to the "is n meters tall" family. So, in many cases, we can know the truth of a sentence about Fred using a member of one family without knowing the truth of a sentence about Fred using the other family.

Without truth-makers as correlates of sentences, "borderline cases" are just sentences whose truth-values are not determinable directly and are not determinable from the truth-values of other sentences about the same object. A borderline case can arise if there is a true sentence using one kind of predicate such that there is no strict definitional necessary connection to the truth-value of a sentence using another kind of predicate, but where the two kinds of predicate

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[12] "Tall" is well-behaved in many ways. One feature of being one-dimensional, unlike "nice" and "bald," is that one-dimensional predicates have a non-vague comparative. For many concepts there is apparent indeterminacy not only for the attributive construction, but also for the comparative construction. It can seem indeterminate which of two men, if either, is balder than or nicer than or more obnoxious than the other. With count-nouns in relation to particle-complexes the situation is even worse. No list of dimensions is forthcoming. Of two table-like objects, no laws determine which is more a table than the other. Only the vaguest "laws" connect material count-nouns with particle-complexes.

are necessarily related. Since height in meters is related to whether an individual is a tall man, so that a man having a given height in meters is sometimes obviously also a case of being a tall man, a sort of paradox arises if we assume that because the truth-value of one characterization of the situation is determinable, so must the other be, i.e. that there ought to be a law. So, "John is 1.78 meters tall" may be known to be true, while "John is a tall man" may not be known to be either true or false..

If we do not suppose that there are privileged ways of characterizing objects, then vagueness arises whenever two families of predicates apply to some of the same entities, have some necessary relationship, but lack precise laws relating them. Vagueness arises from relations between predicate-families. A predicate is vague if there are no non-trivial strict laws connecting it with predicates from another family of predicates applying to items in its extension.

We could define a "precise" predicate as one such that there is a law-like relation connecting predicates from one family of predicates true of an object with predicates from another. So, "electron" is precise because of a law-like connection to predicates of mass and charge. All and only electrons have that particular mass and charge. A single non-trivial law-like connection to another predicate family applying to the same objects suffices. If we demand that preciseness and clear essences require that a predicate is determined by *any* characterization of an object, then no object will have an essence, because no predicate is such that it is always determinable whether it applies to an object under any description. Consider the predicate "prime," which is presumably part of the essence of an infinity of natural numbers. Consider the family of mathematical predicates $p1, p2,\ldots$ exemplified by "$=2$ if the continuum hypothesis is true, $= 4$ otherwise" and "$= 17$ if the continuum hypothesis is true, $= 128$ otherwise", etc. There are an infinity of such predicates. Relative to any of these predicates, "prime" is indeterminate. From "The number of my first cousins is $p17$" nothing can determine whether the number of my first cousins is prime.

V Abandoning the quest

For many theorists, the difficulty with this harmless Davidsonian epistemicism is that there is no obvious way to generalize it to cover the semantic paradoxes. No epistemicist solution is available for the semantic paradoxes, because they directly generate contradictions. Thus the "indeterminable but determinate" solution above will not work. . Thus the above metaphysical

take on the sorites abandons the quest for what McGee has called the "Holy grail,"[13] a single theory that will handle the sorites and the liar and the sea battle, etc.

I think this quest is misguided. The sorites "paradox" is a phenomenon that is more or less bound to occur when we have languages with many predicates whose extensions overlap, and have truth-conditions related to one another but not precisely definitionally related. Relative to those other predicates in the language, applications of the predicate are sometime indeterminate. Applications of "tall" are sometimes indeterminate in relation to "is n meters high." Without another family of predicates covering the same extension with some less-than-definitional relation to the first, there is no indeterminacy, but only lack of knowledge. We would have "'Fred is tall' is true if and only if Fred is tall," and not know whether Fred is tall, but no sorites paradox. Some attributions of "Fred is tall" would be like speculations about details of the past—determinate but unknowable. There is no paradox except relative to intuitions that there ought to be a law determining the application of one predicate in situations described by the other predicate. To summarize: the sorites depends essentially on relationships among predicates. No particular predicates are "vague" except relative to some other predicates.

The semantic paradoxes involve only a single predicate. They arise when a semantic predicate refers to semantic items, either by self-reference or by quantifying over items with semantic properties. Intuitively something about sentences saying semantic things about sentences or semantic terms applying to terms gives rise to paradox.

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[13] Vann McGee, in the talk mentioned above.

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