Vagueness, Ambiguity, and all the Rest¹
An explication and an intuitive test

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0.
Ambiguity, vagueness, and other forms of “indeterminacy” not only are essentials of many artistic uses of language; their absence would also make it impossible for language to function in everyday use as well as in the empirical sciences. Still, their place in theories of natural languages as well as the differences between various forms of indeterminacy are unclear, and recent studies (e.g. Haack 1974, Kempson 1977, Zwicky and Sadock 1975) hardly do any more than confirm the unclarity. But even if we were prepared to leave questions like “the nature of vagueness” to philosophers, we still, as linguists, would have to be able to at least distinguish ambiguity from other kinds of indeterminacy in order to be able, in semantics, to say what is a variation in meaning (and hence would demand more than one semantic representation) and what is merely variation within one meaning (and hence not strictly the business of linguistic semantics).

We shall try in this paper to outline a framework for semantics that accommodates vagueness, ambiguity, and lack of specificity in some of their forms, and also give an intuitive test to distinguish these indeterminacies. We shall however limit ourselves to extremely simple syntactic structures.

1.
Lakoff (1970) suggested a test to distinguish between vagueness and ambiguity. For illustration we take an example of his, in which it apparently proves difficult to decide whether the predicate hit the wall is either ambiguous as to the meanings paraphrased by (a) “hit the wall intentionally” and (b) “hit the wall non-intentionally”, or whether it has only one meaning which then allows for interpretation in situations with both clearly marked intentionality and situations with clearly marked non-intentionality. The example is this:

(1) John hit the wall.

Lakoff now suggests to extend the sentence by means of a construction of the type and-so-Aux-NP as in (2)

(2) John hit the wall and so did Fred.

¹ Earlier versions of what is briefly summarized in this paper were presented at the autumn meeting 1978 of the LAGB in Sheffield and at the 13th Ling. Coll. in Ghent. I am grateful to the organizers and participants of both conferences for the opportunity of giving these talks and for comments and criticism. I am also grateful to the participants of my own seminar at Nijmegen University in autumn term 1978, where a good deal of the material relevant for this paper was discussed. A fuller version of this paper, including, in particular, a more extensive treatment of the role of vagueness in natural languages and wider applications of the test suggested, also to syntactically more complex cases (incl. the so-called ref.-attrib. ambiguity) is in preparation.
We then may suppose that e.g. John hit the wall unintentionally and Fred intentionally, and ask ourselves, whether in such a situation (2) could be asserted truthfully. If this is so, Lakoff would count the predicate *hit the wall* as vague, or as unspecified as to the intentionality of the event referred to; if (2) cannot be truthfully asserted in such a situation, the predicate would have to be counted as ambiguous between one meaning specified as implying intentionality, and another meaning specified as implying non-intentionality.

The underlying assumption for the suggested test is that the *and-so-Aux-NP* construction relies on identity of meaning, in particular, for Lakoff, that the predicate in the second clause of (2) is transformationally derived from an underlying VP that is identical not only morphologically but also in meaning with the VP from which hit the wall in the first clause is derived. If this assumption (in general, not necessarily in its transformational form) is correct, then Lakoff’s test should, we may suppose, mark the predicate *hit the wall* as ambiguous, because, many speakers of English, among them Lakoff himself, are inclined to say that (2) cannot be asserted truthfully in a situation where either Fred or John hit the wall intentionally and the other did it merely by accident. One might think e.g. of a situation where John stood in front of the wall and gave it a blow with his right fist, and Fred stumbled over his vacuum cleaner, fell, and banged his head against the wall. Indeed, this situation is clear: here we cannot truthfully assert (2).

The Catlins (1972) pointed out however, that (2) may very well be asserted in a situation where John falls over his vacuum cleaner and bangs his head against the wall and then Fred, imitating John’s clumsiness, does the same, however quite intentionally. Clearly, here we may truthfully describe these events by asserting (2). Intentionality vs. non-intentionality, the Catlins hence conclude, is not a source of ambiguity in English.

2.

However, there remains the fact that in the situation described earlier, which was not a situation of imitation, (2) cannot be true. Also, the imitation-context does not allow for a reversal of the order of the predicate referring to the intentional and the predicate referring to the non-intentional event. Both facts suggest that the brief exchange Lakoff-Catlin is not all there is to the matter. In fact, we think that the very assumption on which Lakoff’s test depends, that VP-deletion relies on identity of meaning, is false. An argument for this claim comes from a consideration of sentences like the following:

(3) Fred likes her smile.

Upon extension in the suggested manner, we get:

(4) Fred likes her smile and so does John.

Which cannot truthfully be asserted in cases, where Fred and John like different women’s smiles. But that implies that part of the identity of the underlying VPs must be the identity of values assigned to the pronoun *her*. In other words: the *meaning* of the predicate *likes her smile* would differ with every different *reference* of the pronoun *her*. At least since Frege however, it has been generally assumed that meaning may determine reference, but not reversely, as would be the case here. Furthermore, the obvious implication of infinite ambiguity, which is closely tied to any violation of this Fregean assumption, is rather a bit of a threat to the very possibility of theory of meaning generally. So it would probably be wiser to assume that it is not identity of meaning on which the *and-so-Aux-NP* construction relies.
The alternative we want to suggest, is that this construction depends upon identity of interpretation. The interpretation of a predicate expression is its reference, and that is, according to Frege, a concept\(^2\). A concept hence depends, in part, on the values of referring expressions that occur inside the predicate expression. If the and-so-Aux-NP construction then depends upon identity of the concepts referred to in both constituent sentences, clearly, for (4) to be true, both Fred and John must like the same person’s smile. And in Lakoff’s situation for the interpretation of (2), hit the wall would refer to two different concepts: one of intentionally hitting the wall and one of doing so unintentionally. In the Catlin’s imitation situation however, the expression hit the wall would refer to one and only one concept which is not marked as to intentionality. Still, merely saying this, is not saying very much yet. We shall have to make clear, how predicate expressions refer to concepts, and in particular, on what factors the reference of a predicate expression to a particular concept depends. One such factor has already been mentioned: the valuation of any referring expressions contained in the predicate expression. Another factor is suggested by the difference between Lakoff’s result and the result the Catlins reached with the same predicate-expression: in the situation the Catlins gave, there was a focus implicit, a way of looking at the events, that made them look the same (i.e. the same under that focus). If you see one event as an imitation of another, you must see the two events as in some respect the same sort of event.

So let us assume that the reference of a predicate expression to a concept depends on at least two factors: (a) focus (which would be a property of the situation of utterance) and (b) valuation of referentially used expressions contained in the predicate (which would be a property of the situation in reference to which the predicate is interpreted):

In order to not have syntactic problems intrude the relation between predicates and concepts, we assume that what we call predicate expressions are in fact pairs \(<SM, SD>\), such that SM is a string of morphemes (as found in surface structure) and SD is a syntactic description. As a result, there will be no syntactically ambiguous predicate expressions. A string like saw her duck e.g. would be paired on the one hand with an SD that marks duck as a verb and on the other hand with an SD that marks it as a noun, so that there would be two different predicate expressions associated with the string saw her duck. A predicate expression in this sense, then refers to a particular concept depending on the focus and the valuation of its referring parts (let us call these two factors together, in allusion to Lewis (1972), the index for the interpretation of the predicate). So, let us say then, that a predicate expression is an expression of a function from an index to a concept. And since there will not be a concept for every possible index, these functions are partial functions, i.e. they are defined only for some indices. We may summarize this semantic framework as follows:

- Syntactically, a predicate expression is a pair of a string of morphemes and a syntactic description.
- Semantically, a predicate expression is an expression of a (partial) function from an index to a concept.
- a concept is a (partial) function from objects (incl. events, actions, etc.) to truth values.

i.e. a concept determines for every object for which it is defined, either the value \textit{Truth} or the value \textit{Falsity}, depending on whether or not the concept applies to that object.

\(^2\) The reference to Frege’s notion of concept are not to the standard interpretation of Frege in the Church/Carnap tradition but to the probably more correct understanding of Frege urged among others by Geach. (Cf. for a recent brief exposition and for further references Potts 1976)
3.

If we adopt the rough semantic framework that has just been sketched, under what circumstances can we expect ambiguity of predicates (i.e. of morpheme strings that in the SD of the sentence are marked as predicates)? Ambiguity is traditionally understood as that property of a sentence which makes it say something true and false at the same time. Accordingly, for predicates: that property of theirs which makes them predicate something true and something false of the same thing at the same time. Now such may be due to either of two causes: (a) the predicate morpheme-string may allow for more than one SD (let us call this, in the usual way, syntactic ambiguity) or, (b) the syntactically unambiguous predicate expression may, for the same index, refer to different concepts. Now the latter is not possible if we identify predicate expressions with the functions they express. Because a function, for the same argument, cannot have more than one value. So we must make a distinction between predicate expressions on the one hand, and their meanings on the other. Their meanings then, we shall say, are indeed functions from an index to a concept. So in case there is more than one concept for one predicate expression at the same index, there will be more than one function. In other words, the predicate expression will then be semantically ambiguous: i.e. have more than one meaning.

For identity of concepts we have a test: the very same test Lakoff suggested for deciding between vagueness and ambiguity. However, as we saw, it does not do what Lakoff thought it should do: test for identity of meaning; instead, it tests for identity of concepts: if the extended sentence can truthfully be asserted, then there is at least one concept that is unspecified or vague as to the difference in the two events the two constituent sentences are about. If the extended sentence cannot be asserted truthfully under any circumstances, then there will be no such concept. The latter case Lakoff took to indicate a difference in meaning, i.e. ambiguity. However, we saw that this is only so, if the difference between the concepts referred to in the two constituent sentences is not due to the index. So, in fact, Lakoff’s test may be taken as a test between lack of specificity or vagueness ant the one hand and ambiguity cum index variation on the other. And this then explains the problems thrown up by the case the Catlins had adduced and by our own example (4) above: in both cases what is at issue is not ambiguity but index variation: focus variation in the Catlins’ case and valuation variation in the other.

The fact that the test treats ambiguity and index variation alike unfortunately excludes the treatment of some interesting cases. For instance, one might wonder, in view of the following examples, whether the predicate is red is ambiguous or in some sense vague: If we call an apple red, this apple may be about a third yellow-green and the rest red with small yellow and brown spots and the grey remainders of the flower at one end and a grey-brown stem at the other. Now, a tomato with the same colouring, no greengrocer would get away with calling red. Or, take grapefruits, which one sometimes says are red. This variety, like all others, are yellow outside, but have rose-coloured flesh. Tomatoes or apples with the same colour distribution you can call what you like, but surely not red. Fed into the test, all these instances of the predicate is red would turn out not on the vagueness side, but on the ambiguity side. But surely, we would want a distinction between this sort of variation in the use of is red and the other one where the predicate may be paraphrased as either “is of red colour” or “is of socialist persuasion”. The latter, it would seem intuitively, is a clear case of lexical ambiguity, whereas in the former case one is tempted to rather talk about some obscure variation for.

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3 These examples are adapted from Travis (1978). Prof. Travis was also kind enough to discuss with me some issues relevant in this paper.

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which the term vagueness might suggest itself. Now this is one of the situations where the practical linguist, here in particular the lexicographer, would want a criterion to distinguish (lexical) ambiguity from vagueness. A lazy way out of the problem for the theoretical linguist would be in hinting that here probably we are confronted with one of the many appearances of what has been known for long in philosophy as the problem of distinguishing between the analytic and the synthetic, and that there is hardly any principled and theoretically justified way of drawing the line anyway. But this is a lazy excuse indeed, because firstly, it does not help with the practical problem, and secondly, even if the infamous distinction cannot be drawn in general, and even if there eventually remain plenty of unclear cases, this does not imply that means could not be devised to turn at least some of the unclear cases into clear ones or that such means should necessarily be theoretically unjustified.

Let us make an attempt to expand our test so that it will serve this purpose, at least in a good number of cases. First of all, it will be useful to distinguish within the index among the two factors of focus and valuation, for the effects of the latter are indeed quite easily distinguished from ambiguity. If we then call the two sentences to be conjoined in the and-so-Aux-NP construction S1 and S2 and the resulting sentence S3, we may say that S3 will never be true if the valuation of the identical predicate differs between S1 and S2. If, merely on the ground that S1 and S2 are both true, S3 will always be true, then the predicates in S1 and S2 must refer to the same concept, independently of whether there is one or the other specific difference between the events by reference to which the predicates are interpreted. In such a case, the concept is vague or unspecified as to that specific difference. If the predicate is interpreted in S1 and S2 by reference to different events that differ in a specific way, and, although S1 and S2 are true each on its own, S3 is false, then this may be true either to the predicate being ambiguous or to a variation in focus. If the cause of S3’s falsity is ambiguity, then, no matter what focus we choose for S3, S3 will never be true; if the cause is focus variation, then there must be at least one focus under which S3 is true (the situations referred to, of course, unchanged). These considerations are summarized in the following diagram. This diagram may indeed be used as a description of a possible test procedure for distinguishing syntactic ambiguity, lexical ambiguity, vagueness, difference in valuation, and variation in focus. Such a test, of course, relies on intuitive judgements of the language-user and hence shares all the problems that come with intuitive judgements. In practical application so far however, these problems have remained surprisingly limited and clear results have been obtained in cases where bare intuition gave no answer. Unfortunately, we are unable here, due to limitation of space, to show the test at work. We have given in the text so far only very few examples of the distinctions the test can make and we have still left out the more obvious cases, like clear lack of specificity (as e.g. in kicked the ball as to the specification of whether the right or left foot was used in kicking), or clear lexical ambiguity (as e.g. in went to the bank).

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4 For a brief introduction to and a critical discussion of, in particular, Quine’s views on the analytic-synthetic distinction in relation to linguistic matters, cf. Bosch (1979).
Take two sentences (NP1-VP)_{S1} and (NP2-VP)_{S2} such that the VP (which is morphologically identical in S1 and S2) is interpreted in S1 by reference to an event, action, state, etc. with the property P1, and in S2 it is interpreted by reference to an event etc. with the property P2.

The VP refers to different concepts in S1 and S2, because of its syntactic ambiguity.

The VP refers to different concepts in S1 and S2, because of a difference in valuation of the ref. const. in the VP.

Conjoin S1 and S2 into a sentence S3 of the syntactic description (NP1-VP-and-so-Aux-NP2)_{S3}.

The concept by reference to which the VP is interpreted in S3 is focus-independent and is unspecified or vague as to the difference P1 vs. P2.

The VP is ambiguous and has different readings in S1 and S2.

The interpretation of the VP depends upon focus. Under at least one focus, F, the VP in its occurrence in S1 and in its occurrence in S2 refers to the same concept C, which does not contain any specification as to P1 or P2.
4.

Concepts in our semantics are always focussed, i.e. they are specified with respect to some properties of the objects that fall under them, but not with respect to all properties. The focus determination of a concept is a matter of what speakers (concept-users) find important to focus on. And that may differ from one situation to another. A particular focus may however prove to be of so general and lasting value that it will eventually become incorporated into the meaning of a predicate. A focus difference this way may turn into an ambiguity, or a simple property frequently in focus may become part of the meaning of a lexical item. The valuation determination, on the other hand is a determination of a concept from the other direction: from the world, from the situation in reference to which it is interpreted. Climbing the north face of the Eiger is not just climbing and doing it on the Eiger north face, a concept like this incorporates assumptions, associations, knowledge and illusions, hopes, fears, desires and the like, which are all tied up with the actual extension of the concept: the actual Eiger-climbing-events so far. No wonder then, that no focus whatever could bring about that John climbed the Eiger and so did Fred will be true if one of the two did climb the Eiger and the other climbed some nondescript rock near Okinawa that by joke or accident bears the same name. But otherwise focus can bring about a lot; we can often find, with some search and imagination, ways of looking at different properties or events that make them sufficiently similar to be covered by one concept. As we saw earlier, the rather different events of accidentally and out of pure mischief hitting one’s head against the wall and the action of going through the same moves, carefully contemplated and every bit planned out, may well be the same thing if the focus is on imitation. If we focus on something else, say on Fred’s clumsiness that made him hit the wall, the focus will not allow for sameness between the clumsy event and its carefully planned imitation, and the sentence Fred hit the wall and so did John, the reference to the actual events being exactly as it was before, cannot possibly be regarded as true. Even if you say that a particular wall is red, that sentence may be true (although, as everybody can see, the wall is white), if we focus on its internal colouring; perhaps a natural thing to do when you play the game of demolishing walls for the esthetic effects of the ruins. Concepts, like pictures, Ziff (1973) said, are representations. And representation is selective, is focussed; no representation will give us all the properties of what is represented, and even the best picture of a cat won’t purr.

Literature


