Sherlock Holmes Was In No Danger

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1.   Introduction.

Consider the following sentences[1]:

(1)   a.   This takes you to a whole new *level*.
       b.   Charters take people seeking *protection* to Canada.
       c.   An FBI agent was arrested for selling *documents*.
       d.   Sherlock Holmes was in no *danger*.

An important ingredient in understanding such sentences is resolving the question of: level in/of what? protection from what? what sort of documents? danger from what? Each of these is an example coming from novels, television commercials, and news reports. In the first instance, it is from a commercial for a brand of computers. In the commercial, which is pushing the most recent version of that computer, the voice-over announces (1a) just as a teenager exults after having apparently accomplished something worthy of jubilation in a computer game. The message is intentionally interpretable in multiple ways: you are taken to a new level *in the game*, you are taken to a new level *in computing power/speed*, and, being a commercial, one also reads that it takes you to a new level *in life*. The second example is a story caption in a local newspaper. The article is about the shortage of flu shot vaccine in the U.S., and the people are going to Canada for flu shots, seeking protection from *contracting the flu*.   The third example, also from a newspaper report, requires not just that the FBI agent sold some documents or other, but rather that they were *sensitive confidential* documents, likely purloined from the FBI itself. The final instance is from a novel.   In the novel the protagonist, in seeking to solve a crime, has overlooked something which in retrospect appears terribly obvious. The character's self-deprecation thus reads: Sherlock Holmes' *reputation as a master sleuth* was in no danger of being diminished. Each example, in context, reads seamlessly and poses little challenge to attentive or even inattentive readers and listeners.

However, each of the words highlighted in (1), in a different context, easily reads as something else:

(2)   a.   This elevator takes you to a new *level* (of the building, *not* in a computer game).
       b.   Right Guard [an underarm deodorant] offers you 24-hour *protection* (from that embarrassing underarm wetness and odor, *not* the flu).

    c. The state police arrested an illegal immigrant who was unable to produce *documents* (of citizenship, etc., *not* documents stolen from the FBI).

    d. During the forest fire, the Johnson's home was never in *danger* (of being consumed by the fire, *not* of losing its reputation as a master sleuth).

We are going to use the neutral term "understanding" to describe this phenomenon. It is clear from the outset that each of these understandings is not a separate lexeme or dictionary entry; there are too many of them and the understandings are quite clearly relatable to one another, unlike the ambiguity of words like *bank, ruler, watch, hide*, etc.

It seems these understandings, however, must be represented at some level in the semantics, pragmatics, or psychology, for failing to achieve such an understanding leaves one without an adequate apprehension of the sentences as a whole, as presumably reading the title of this paper alone demonstrates. Suppose we take the extension of a word like *protection* to be the entire set of objects, structures, and actions that offer protection *of any sort whatsoever*. What does this extension look like? It includes insurance policies, weaponry, skin care products, many dogs, few cats, burglar alarms, anti-virus programs, the National Guard, bicycle helmets... certain payments to bullies, good advice from your mother... and so on. It's not at all clear what would be excluded, in the long run. Perhaps clearer examples are the words *clue* and *problem*. We take the point of view that anything whatsoever is (potentially) a clue (to something else) or a problem (for some reason), and the denotations are roughly as inclusive as a word like *thing*. However, if Sherlock is on the scene and has yet to find any clues, surely he noticed the wood floor, which is a clue e.g., that a tree was cut down, or noticed the poorly painted ceiling, which is a problem (if selling the house), yet he also encountered no problems or found any clues[2].

Can we just leave things at that, where we assign the extension of such nouns at all points of reference an extension that is so general? It would *appear* this would give rise to problems. Suppose we're outdoors and concerned about harmful ultraviolet rays from the sun. You claim that applying underarm deodorant, which we will assume is virtually transparent to UV radiation, provides protection. I say it does not. We both agree that it provides protection against that embarrassing underarm odor and wetness (and social ostracism), but when I say "It is not protection!" it would appear I'm asserting something *true*. Our sense is very strong that this is not like saying something false to convey something true, e.g. I note that your latest book is fifteen feet thick (which is false, we both know it's only about three inches thick) to convey that you've written a lot, perhaps a little too much (which may, or may not, be true). If this judgment has the merit we believe it to have, there is a serious problem with an approach that provides for generalized, all-inclusive intensions.

2. Implicit Variables

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[2] A real example is the headline "Physicist, student uncover cosmic clue". Reading on, one learns that the discovery concerned how top quarks decay.

Almost anyone steeped in current semantic theory would immediately consider implicit variables as a solution to the problem just noted. Since Davidson (1967), for instance, it has been a popular move to countenance an implicit event-argument variable into verb meanings (Kratzer, 1995; Diesing, 1992), while in the domain of nominals, an implicit variable analysis has been considered by a broad range of researchers.

2.1. Theoretical Parsimony (Take 1)

Partee (1989), building on work by Mitchell (1986), makes many of the basic observations that may motivate implicit variables. She points out that many types of contentful context-dependent expressions behave similarly to overt pronouns in that they display bound variable uses, in addition to deictic and discourse anaphoric uses. Examples are given below:

(3)   a.   John visited a *local* bar.
        b.   Every sports fan in the country was at a *local* bar watching the playoffs.

(4)   a.   John faced an *enemy*.
        b.   Every participant had to confront and defeat an *enemy*.

Partee argues that expressions like *local* and *enemy* have to be "anchored" to some reference location (in the case of *local*) or individual (in the case of *enemy*). Anchors can be provided by the non-linguistic or the linguistic discourse context, but can even be provided by quantificational contexts: (3b) and (4b) can be interpreted as depicting a situation in which, respectively, each sport fan was at a bar local *to him/her* and each participant had to confront one of *his/her* own enemies. In these cases, the interpretation of the context-dependent expression covaries with the choice of an individual in the domain of the quantificational expression.[3]

Once the existence of a bound reading for these context-dependent expressions is acknowledged, the argument in favor of the implicit variable analysis follows from considerations of theoretical parsimony. The semantic formalism already provides such tools as variables, assignments and lambda abstraction in order to account for the interpretation of overt pronouns, and the same tools can be employed in order to derive the interpretation of contentful context-dependent expression as long as it is assumed that these expressions contain implicit variables of some sort. As in the case of pronouns, the covarying interpretation displayed by words like *local* and *enemy* in (3b) and (4b) is treated as an instance of (semantic) binding, involving lambda abstraction on the implicit variable associated with these words.[4]

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[3] Other expressions discussed by Partee that display similar behavior are the intransitive version of the verb *notice*, locative and temporal expressions like *away*, *ahead*, *farther on*, *nearest*, and *later*, adjectives like *foreign* and *opposite*, and nouns like *foreigner* and *stranger*.

[4] It is possible that such variety of "understandings" noted above (in 1) may only appear when one has something greater than a one-place predicate, i.e., quite possibly this phenomenon should only appear with

Stanley (2000, 2002) and Stanley and Szabó (2000), among others, generalize the use of implicit variables to all nominal expressions – not just those context-dependent expressions Partee considered – in order to account for the phenomenon of *quantifier domain restriction*. The choice of the domain with respect to which quantificational expressions in natural language are interpreted is dependent on their context of use. For example, the quantifier *everyone* in (5) is normally interpreted as quantifying on the dinner guests mentioned in the first sentence (actually, on those who had dessert) rather than on the whole set of humans in *D* (von Fintel, 1994, 1998).

(5)   The dinner guests had rhubarb pie for dessert. *Everyone* developed a rash.

Interestingly, even in this case of context dependence, covarying interpretations can be built that seem to parallel the bound interpretation of overt pronouns. Consider the example in (6), which is modeled after an example presented by Heim (1991):

(6)   Most classes were so bad that no student passed the exam.

The most obvious understanding of this sentence can be paraphrased as "for most classes *x* it was the case that *x* was so bad that no student in *x* passed the exam", a paraphrase that highlights how the choice of the domain over which *no* quantifies is dependent on the choice of an object in the domain of the quantifier *most* (i.e. on the choice of classes). Following the implicit variable approach, this understanding of (6) can again be treated as an instance of semantic binding: in general, an implicit variable associated with the quantificational expression *no student* contributes to the determination of the quantification domain for *no*, and in the particular case of (6) this variable can be bound by the higher quantifier *most*. Once implicit variables are postulated, quantifier domain restriction can be accounted for in terms of the formal machinery that is independently needed to deal with the interpretation of pronouns.

2.2. Locality (Take 1)

Another benefit of resorting to implicit variables to account for the context dependence of interpretation comes from the *local* nature of the process of quantifier domain restriction. Von Fintel (1998) – borrowing examples from Westerståhl (1984) and Soames (1986) – argues that contextual restrictions on sentences containing quantifiers cannot be reduced to global restrictions of the discourse domain. E.g., there is no way of restricting the discourse domain so that *every tennis player* in (7) quantifies only on Swedish players while at the same time *foreign tennis players* denotes a non-empty set.

(7)   Sweden is a funny place. Every tennis player looks like Björn Borg, and more
        men than women watch tennis on TV. But most people really dislike foreign
        tennis players.

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relational terms (Barker (1995), Partee and Borschev (2003)), an interesting question but one we do not take up here.

On the other hand, if quantifier domain restriction follows from the assignment of value to an implicit variable in the logical form of phrases like *every tennis player* in (7), the relevant restriction is not expected to affect other phrases in the sentence.

2.3. *Weak crossover (Take 1)*

Since Partee (1989) the literature has considered whether the implicit variables postulated for the interpretation of context-dependent expressions trigger Weak Crossover violations (Lasnik and Stowell, 1991). The Weak Crossover (WCO) Principle is a constraint on the interpretation of pronouns to the effect that a pronoun can only receive a bound variable interpretation if it is c-commanded by a quantified expression in its base position. So, for example, the pronouns *his* in (8a) and (9a) can be interpreted as a variable bound by the quantificational expression *who* and *everyone*, but the same interpretation is not available for the pronoun *his* in (8c) and (9c): comparing the (simplified) logical forms which would derive these interpretations – given in (8b)/(9b) and (8d)/(9d) – it can be seen that the LFs in (8b)/(9b) respect the WCOPrinciple, while the LFs in (8d)/(9d) violate it.

(8)   a. Who$_1$ admires his$_1$ boss?
        b. [Who λ_1 [t$_1$ admires his$_1$ boss]]
        c. *Who$_1$ does his$_1$ boss admire?
        d. *[Who λ_1 [his$_1$ boss admires t$_1$]]

(9)   a. Everyone$_1$ admires his$_1$ boss.
        b. [Everyone λ_1 [t$_1$ admires his$_1$ boss]]
        c. *His$_1$ boss admires everyone$_1$.
        d. *[Everyone λ_1 [his$_1$ boss admires t$_1$]]

Partee (1989) notices that similar interpretive restrictions seem to hold of context-dependent expressions like *local*, as evidenced in (10).

(10)   a. Every untenured professor$_1$ in the state received a letter from the leader of the local$_1$ union.
        b. #The leader of the local$_1$ union sent a letter to every untenured professor$_1$ in the state.

The contrast in (10) shows that a bound variable interpretation in which the anchor of words like *local* covaries with the choice of individuals in the domain of a quantificational expression is unavailable when (the base position of) the quantifier does not c-command the context-dependent expression. This restriction on the interpretation of context-dependent expressions thus follows from independently motivated constraints that apply to variables in general; no additional ad hoc principles are required.

Martí (2003a,b) extends the WCO argument to the case of quantifier domain restriction. Some interpretive constraints that hold of the choice of domain for quantificational expressions can be interpreted as resulting from the restrictions imposed by the WCO Principle on the interpretation of the implicit variable that is associated with these quantificational expressions. Martí's basic contrast is given in (11):

(11)   The business professors gathered in the faculty room. The meeting was about companies with which the School of Business has close contacts. Several professors are in contact with several representatives from those companies. One of the professors asked…
    a. Who λ_1 t_1 admires every$_1$ representative from Kodak?
    b. *Who λ_1 does every$_1$ representative from Kodak admire t$_1$?

In a way parallel to the examples in (10), it is clear that the LF in (11a) abides by the WCO Principle while the one in (11b) violates it. And, as predicted, only in the first sentence can the quantification domain of *every* be taken to covary with the choice of professor.

3.   Some Issues

Summarizing, three types of arguments have been proposed in the literature in favor of the implicit variable approach to context dependence of meaning: (i) the "theoretical parsimony" argument, which claims that covariation between context-dependent expressions and quantifiers can and thus should be treated using the independently required machinery of lambda abstraction, variables and assignments; (ii) the "locality" argument, which claims that contextual effects should be intertwined with the recursive semantics given their local nature and maintains that implicit variables in the linguistic representation straightforwardly provide for the required locality; and (iii) the Weak Crossover argument, which claims that the attested restrictions on the interpretation of context-dependent expressions are an immediate consequence of well-formedness principles that can be independently argued to hold of variables at LF. Taken together, these arguments support the conclusion that context dependence should be treated in terms of covert pronoun-like elements. However, some facts and open questions cast doubt on the full generality of these arguments.

3.1. Weak Crossover (Take 2)

While the Weak Crossover argument is generally thought to be the strongest argument in favor of the implicit variable strategy, it too raises issues. For instance, Partee (1989) notes the WCO effects in the case of context-dependent expressions seem to be milder than the effects determined in the same configurations by overt pronouns, calling into question the parallelism. And Percus (2004) mentions (in a footnote) examples of quantifier domain restriction that appear to violate the Weak Crossover Principle.

Also, Blair (ms) points out another failure of the alleged parallelism between implicit variables and overt pronouns with respect to the WCO Principle. In the sentences in (12),

the NP in subject position can be interpreted as if it were bound by the quantifier in object position; on the other hand, this is not an option for overt pronouns, as shown by the parallel examples in (13), which lack the corresponding interpretations presumably because the Logical Forms that would derive them violate the WCO Principle.

(12)   a.   A grandparent accompanied every student to graduation.
        b.   A favorite story helped to put every toddler to sleep.

(13)   a.   His grandmother accompanied every student to graduation.
        b.   His favorite story helped to put every toddler to bed.

3.2. Locality (Take 2)

Sentences like (7) show that the process of domain restriction seems to be closely intertwined with semantic composition, the choice of a particular domain having often just a very local effect. The assumption is that this state of affair is extremely problematic for analyses that try to account for context dependence without resorting to pronoun-like lexical items that are locally present in the linguistic representation of a sentence. But is this really so?

The locality argument in favor of the implicit variable approach seems to presuppose a very "static" conception of interpretation with respect to a context, namely that Logical Forms are interpreted as a whole with respect to the same unchanging context. This is highly implausible: Given the nature of linguistic communication (a sentence begins to be uttered at a certain point in time *t* and is completely uttered only at a later point) the interpretive procedure must be by definition incremental, allowing for the knowledge state of the speakers – and hence for the context of utterance – to be updated in a very rapid way. Of course, the burden of proof that the local nature of domain restriction can be captured once a more dynamic notion of context and context update is adopted lies mostly on those who want to propose such a theory. But at the same time, we would argue, part of that burden lies (in reverse) on those who claim that this locality can be captured in a straightforward way *only* in terms of implicit variables. In our opinion, the issue is not yet settled either way.

Furthermore, once pronoun-like elements are postulated to appear in the semantic representation of context-dependent expressions, their nature and location must be explicitly described. The simple hypothesis, suggested by Partee's (1989) original observations, that implicit variables are arguments of nouns does not seem to generalize. For one, there are cases like (14) in which the domain restriction that characterizes the interpretation of a quantificational expression cannot be accounted for in terms of an implicit variable in argument position of the noun that combines with the determiner.

(14)   In most countries I visit, many tennis players try to be like Monica Seles.

The interpretation of (14) requires the quantifier *many* to be restricted to the domain of tennis players in each given country that is being considered. On the other hand, it seems

plausible that if the noun *tennis player*s subcategorizes for any location argument, this should denote the place where the playing takes place, rather than the place where the player was born or resides (von Fintel, 1998).

Similarly, examples like (15) are problematic not just for theories that propose that the implicit variable involved in quantifier domain restriction is an argument of the noun the quantifier combines with, but more generally for all theories that assume that the implicit variable is introduced by the noun. No noun combines with the adverbial quantifier *always* in (15), but this is still easily interpreted as being restricted to a domain that covaries with the choice of summers induced by the higher quantifier *most* (Martí, 2003b).

(15)   Most summers were so bad that, if it rained, I always missed the bus.

3.3. Theoretical Parsimony

The current debate concerning the nature and location of implicit variables (Stanley, 2002; Breheny, 2003; Martí, 2003a,b; Kratzer, 2004; a.o.) points towards the conclusion that implicit variables differ from overt pronouns in certain important respects. These differences weaken considerably the argument from theoretical parsimony:Special provisions must be made in the syntactic/semantic machinery for the kind of implicit variables needed in order to derive the desired contextual effects. And it should be noted that, without the argument from theoretical parsimony, the availability of "bound" understandings for context-dependent expressions does not by itself lead to the conclusion that context dependence of meaning is a by-product of the contextual determination of a value for implicit variables. True, it may as well be the case that semantic covariation between context-dependent expressions and quantificational expressions should be treated in terms of syntactic/semantic binding of a variable. But as Recanati (2003) argues, concluding from this that an implicit variable is present in the LF of context-dependent expressions *even when these are uttered in isolation* is by no means necessary.

Partee (1989) already notes that expressions with implicit variables and the corresponding ones with overt variables display different behavior. The contrast between the well-formedness of the sentences in (16a,c) and the ill-formedness of the sentences in (16b,d) seems to argue that while an implicit variable can be bound by an "antecedent" (a child-rearing method, or a strategy, respectively) that is evoked only indirectly in the sentence, this is not possible for overt pronouns.

(16)   a. Not everyone who thinks their parents did a bad job bringing them up actually switches to the opposite child-rearing method.
          b. *Not everyone who thinks their parents did a bad job bringing them up actually switches to the child-rearing method opposite to it.
          c. Every beginning general who loses his first battle switches to a different strategy in the second.

d. *Every beginning general who loses his first battle switches to a strategy different from that/it in the second.

Martí (ms) attempts a response but, to our minds, does not really address the fundamental issue raised by Partee's original criticism. Something special must be said for implicit variables that does not hold for overt pronouns, and the proponent of the implicit variable approach is left with the burden of having to argue for the "linguistic reality" of the postulated special properties of implicit variables and to explain why no language seems to provide for overt pronouns that share these special properties. No author, to our knowledge, successfully tackles either task.

In addition, as pointed out by Cappellen and Lepore (2002), among others, implicit variables do not lend themselves to functioning as antecedents of subsequent anaphoric expressions (17a), thus differing from the behavior of overt pronouns, which can function as antecedents (17b).

(17)   a. ?Many students failed, and it's a big domain.
         b. He's a senator, but nobody respects him.

Possibly, whether a pronominal element is phonologically realized or not might have an effect on its ability to introduce an antecedent for anaphoric relations, but why null elements – which have the same full semantics of overtly expressed elements – should fail to support subsequent anaphora remains completely unexplained at this point.

3.4. Summary Evaluation

While we have not been able to provide a complete review, arguments in favor of implicit variables in nominal expressions are at best mixed case, since doubt may be cast upon any of the positive arguments put forth thus far. On the other hand, truly decisive objections remain out of reach as well. What is important to us, however, is that the case for implicit variables is not without its issues, and that there remains room for exploring other alternatives in dealing with the examples in (1). In the final section we turn to a sketch of what such an analysis might look like.

4.   Situations

Let us return to a consideration of our lead examples. It seems clear that they share some central properties we have been discussing, which would make them primary candidates for an implicit variable analysis. There is, first of all, an intuitive sense of understanding in context, an understanding that may vary from one context to another, as already noted. Quantificational binding effects are possible, as illustrated in (18):

(18)   Every virus presents a danger. (i.e. for each virus v, there some danger to someone x such that danger(to x, from v))

We also get indirect types of binding, similar to "Each man went to a local tavern," where the quantification is over men, and not places:

(19)   Each man was alerted to some danger. (i.e. for each man x there is some cause-of-danger y such that danger(to x, from y)

Note in (24) that the understandings can differ from man to man. That is, one man is alerted to the fact he has an illness, another that he's being sought by the police, etc.

Given the discussion above, however, we wish to explore an alternative to the implicit variable approach. The alternative is based on situations as explanatory devices, but instead of treating situations as value-assigned targets of implicit anaphoric devices, we instead consider treating them as parameters of evaluation. Our aim here is not to argue the superiority of any alternative, but rather simply to sketch out a viable alternative.

4.1. Situations are rich

We take situations to be parts of worlds, as in Barwise and Perry (1983) and Kratzer (1989, 1998). They may be characterized by sets of propositions, and, if two situations are describable by the same set of propositions, they are of the same situation type. Further, situations themselves are *localized* (Barwise and Perry (1983)). Not just any arbitrary subset of propositions one can imagine describes a situation; they have a coherence of sorts brought together by locatedness. Like events, however, locating them precisely in time and space is an uncertain enterprise.

On the view we take here, situations have a structure that is "rich". Let's illustrate this in the following way. Take a really, really simple situation, in which there is a horse, and that's it. One can take the point of view that this alone fully describes a pretty minimal situation. But we're going to take another point of view, namely, that even seemingly minimal situations come loaded with a lot of attendant *structure*. This structure is typically expressed in natural language by generic and habitual sentences. So, for instance, if you answer the following questions regarding this spare situation where there's just a horse, you'll see where we're headed. We have a horse: Does it eat meat? (no); How many legs does it have? (four); Does is go "woof woof"? (no); Is it bigger than a breadbox? (yes); Does it have a mane? (yes). That is, there simply being a horse brings along with it the set of propositions that characterize the structure and characteristics of a (typical) horse. Attribution of these properties to the horse in the scenario is accomplished defeasibly; that is, it's so unless we are informed otherwise. There are of course many properties that are simply unspecified, e.g. whether it has eaten more than three pounds of oats in the past half hour. And then there are others that are specified, but only vaguely. This horse weighs more than a large dog, but less than a full-grown rhinoceros. We are also going to assume, for sake of convenience and without further comment, that the set of generalizations are to be found in common ground (Stalnaker, 1978), presupposed by all interlocutors.

Now let's take a slightly different scenario. We have here before us a real live actual horse. Someone has taken the time to remove its mane. Since we know this about this individual horse, what is true about whether it has a mane is what we see, not what we defeasibly assume. We may (or may not) also know its precise weight, and whether it has, or has not, eaten oats in the past half hour. It ~~also~~ has individual characteristics as well, which are also expressible as generalizations. For instance, if you speak too loudly, it'll try to bite you, or it likes to eat green apples but not red ones. All these things too then may become a part of even this very spare situation.

Episodic, rather than generic or habitual sentences, describe events, states, or processes ~~which~~ that occur at a definite location in a world. Thus, episodic propositions "anchor" the situation. If one omits all propositions describing a situation ~~which~~ that anchor the situation to some time and space, we believe, one does not have a "situation". In the above, if we failed to tell you that there is a horse (an episodic sentence), or that we have one right here (also episodic), and listed only the generalizations governing horses, we'd have no "situation" at all. Thus, a situation on our enriched view is a set of pairs of the sort s=<E, G> where E is a non-null set of episodic propositions locating and describing s and G is a set of generalizations governing elements of s (characterized by individuals and types that compose in the propositions of E). The information derives from varying sources, among them, what we perceive, what we're explicitly told, what we defeasibly assume, and what is out there in the world we know about ("real-world knowledge").

To see how this works a little more, let's consider the following situation: Bob, here and now, is standing in the path of an avalanche. This is the sole proposition in E, with Bob and the avalanche as composing values. What is in G? We're defeasibly assuming Bob is an adult human male with all the typical physical strengths and frailties—he's not Superman. About the avalanche, we're assuming it consists of many tons of on-rushing snow, rock, and/or other debris sliding down an incline at a fairly rapid rate, and like all bulky things propelled by gravity is not inclined to stop or change direction. As for generalizations governing relations between humans and avalanches, humans suffer damage if suddenly slammed into by avalanches. This all has the tiresome ring of the obvious, but it expresses our understanding of the structure of the situation based on what we've been told about the (episodic) relation between Bob and the avalanche, and without all this additional understanding, there would be no cause for concern. That is, in the <E,G> situational structure, the 'G' part is often, even normally, taken for granted.

4.2. Interpreting lexical items

The proposal we wish to explore here is that situations provide parameters of evaluation for lexical items, and not localized composing values assigned to variables. What is special about lexical items on this view is that they are the elements operated on by the interpretation function F in the model. We are proposing that F be not simply a function from world-time pairs to appropriate denotations, but rather that the function be relativized to situations in assigning denotation. For a lexical item W and its extension D, F(W) (s) = D. In a Montagovian approach, intensions are functions from world-time pairs to appropriate extensions. However, in the parameterized model we suggest here,

intensions of lexical items are defined only for those world time pairs that fall within the situational restriction, i.e. only if <w,t> ∈ ∩E or <w,t> ∈ ∩G in **s,** and undefined otherwise (these are partial functions).

To give a flavor for the proposal, let us return to Bob, who we left standing in the path of an avalanche. Now, suppose we comment on Bob's current prospects as follows:

(20)   Bob is in some *danger*.

In the current situation, we have Bob standing there and information about avalanches and people. In that type of situation, what constitutes, or counts as, the "danger"? Clearly the potential causer of harm to another constituent of the situation (in this case, Bob). The interpretation of *danger* will then be limited to avalanches—in the situation there are no viruses, daggers, secret police, etc., around. Thus, ~~the following~~(21a,b) would be synonymous with respect to the situation at hand:

(21)   a. Bob avoided *the danger*
        b. Bob avoided *the avalanche*.

How could such an approach deal with the locality effects mentioned above? One vehicle for defining the situations that serve as evaluation parameters is to present a proposition. Different propositions distinguish different situation-types. Bob standing over there is a different situation from Tom standing over there (assuming Tom and Bob are different individuals). The generalizations governing Tom are, under normal circumstances, known to differ from those governing Bob (e.g. Bob can swim, Tom can't, Bob works at a car wash, Tom at a bank, etc.). Now consider a ~~case~~situation (?), as Bob contemplates the onrushing avalanche, ~~where~~ in which Tom, a short distance away, is being pursued by a pack of ravenous wolves (and the wolves don't see or care about Bob). Now we have generalizations about wolves, why they pursue other creatures, how they act when ravenous, how fast humans (vs. wolves) can run etc., and nothing about tons of sliding debris, or Bob. ~~We can say~~ O~~o~~f our observations, we can say (22):

(22)   Tom is in danger.

~~A~~and it should ~~be~~~~equally~~ now be clear why that is so.

In the larger situation, the one that contains Tom and Bob, they are the only two men. On this understanding, we can say;

(23)   Every man is in danger.

The direct binding effect arises because the presumed logical form of the interpretation is approximately as follows:

(24)   [[Every x: man(x) [x is in danger]]

When the value Bob is assigned to x, we now have a proposition 'Bob is in danger', which gets evaluated exactly as (20), and when Tom is assigned as the value it is evaluated as (22). While we do not present an explicit account of distributivity (as opposed to quantificational binding), we note that distributivity too defines a series of distinct propositions in instances such as (on the distributive, not the group, reading):

(25)   Tom and Bob are in *danger*!

So the general moral is that whenever one has a propositional structure, one has the opportunity to introduce a new situational structure into the evaluation. "Locality" then derives from propositional interpretations, and not directly from the number of quantifiers found in a sentence.

A similar line of reasoning is employed to understand why in sentences like those below, one gets apparent "direct binding":

(26)   Each of the men was in danger. But most of them found *protection*.

With appropriate background, different sets of generalizations come into play for each value assigned to x in [x is in danger]. With appropriate background, this may lead to distinct interpretations assigned to "danger" for each individual. This situational information serves to evaluate the instances of [x found protection] for the values of x. So, if one of the values is Bob, and crawling into a cave to avoid the avalanche preserves him, then the cave is protection in that situation. The value Tom, in [x found protection], might lead to noting that he climbed a tree to successfully avoid the wolves, and therefore the tree was his protection (and not the cave).

We do wish to point out that the context does not always provide such a strong story as to eliminate all "understandings" but one. In these instances, the meaning of the phrase is something close to its generalized intension (i.e. its existential closure on an implicit variables approach). Consider the following scenario: Nostradamus and Bob are good friends. One night, Nostradamus has a highly obscure dream, or perhaps just an urgent premonition. Nostradamus wakes up and says to his wife: "Omigosh! Bob is in danger! I just KNOW it!" When questioned, he cannot provide any hint of the source of the danger – he just...knows.

A more prosaic type of example is when such words function as subjects in generic or copular sentences of some sort. For example, in saying:

(27)   a. Every danger presents an opportunity.
        b. Protection is something that almost always incurs its own costs.
        c. Most clues get overlooked.

4.3. Ubiquity

13

The proposal made here is that situational parameterization applies to the interpretation of all lexical items (i.e. non-logical expressions). In one way, this broad claim is a good thing, for we know that effects occur not only with respect to nouns, but also with regard to adjectives like *local* or *opposite*, prepositions like *away* or *near*, and verbs like *notice*, *leave*, or *see*, illustrated below:

(28)   Gee, it's nice to be able to *see* again.

(Recovered from eye surgery? Get your glasses cleaned? Fog finally lift? The flashlight working? The spectator in front of you finally sit down...?)

~~However~~Perhaps, the probably most interesting issue that ubiquity raises, however, is that we simply do not have a sense of "understandings" with most ~~let's call them normal~~concrete lexical items, as we do with the more abstract *clue*, *protection*, etc. We just don't seem to see anything different in *meaning* between (29a,b):

(29)   a.   Millie bought a *cat*.
        b.   Mike bought a *cat*.

The sameness of meaning is preserved even under circumstances ~~where~~ in which the cats bought were of very different types (e.g. a Burmese, and a Persian, or a large orange one and a small grey one...). Even something as widely varied in form as the extension of *(hand)tool* does not lead to similar intuitions (consider what, e.g., an electric saw and a hammer have in common in form, or in dedicated function). From the standpoint of at least some implicit variable approaches, the answer to this is an easy one: There is no implicit variable associated with *cat*, though there is with *protection*. But ubiquity prevents us from claiming likewise—all words are interpreted situationally.

Our sense is that, with nouns, the difference is not variety in form, but rather it has to do with three related properties, which we'll call ontological stability, persistence, and causality.   The extension of a word like *protection* is ontologically unstable, in that it does not always designate a material object, an event, a proposition, a substance, etc. Depending on the situation, "protection" might be something as concrete as a baseball bat, or as ethereal as a person's oath. A "clue" can be as concrete as a lead pipe, or as wispy as a false claim someone made. A "level" can be as concrete as a concrete floor, or as abstract as a number ("Grade level"). Related to this is a lack of persistence on the part of those words we feel give rise to multiple understandings. *Persistence* is the property of entities such that if they fall into category X with regard to situation s, then they also fall into category X with respect to situation s' where s<s'. (In our convenient terms, s<s' iff s = <E,G> and s' = <E',G'> and E⊂E' and G⊂G'. Intuitively, s' "provides the same or more information" than s.) It is fairly clear that additional information added to our knowledge states can change assessment of whether an entity is a member of a category, for those types of things that also engender different "understandings". While ~~something~~ some things in a situation (e.g., that ~~is~~ a cat is there, or that a lead pipe is there)~~,~~ ~~is~~ are going to stay that way whatever information we add, with 'danger' for instance, it can "come and go"" as we add more information.

Ravenous wolves are chasing Bob; he's in danger. The wolves are the very, very slow-running variety, so he's not. The slow-running variety wolves chasing Bob have taken speed drugs – he's in danger again! – and so forth. But throughout, the wolves are animals, Bob is a human, running is a variety of locomotion, etc.

But not all cases we examined exhibit instability and lack of persistence. Example (1c), an FBI agent being arrested for selling documents, is one such case. Here, the reader tends to make the assumption that the documents in question were secret, sensitive documents, and probably stolen from the FBI. In this instance, the forms of documents is ontologically stable (typically paper or electronic form), but the identity of the documents helps make sense of why the FBI agent was arrested, the cause of his or her arrest. Different types of documents play different causal roles in different legal and social interactions, and it would appear that these distinguished causal roles are behind our understanding of *documents* in this example.

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