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"Mismatches" of Form and Interpretation

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Note:
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The theme of this conference, expressed as "semantics meets acquisition," has an amusing ring to it as it hearkens back to B movie titles such as "Wolfman meets Frankenstein." This latent reference to movie monsters turns out to be apt, in a certain sense, as when I think about the twin issues of acquisition and semantics, and how to put them together, it does seem a monstrously hard problem indeed. Were this presented to me as an abstract problem in a form that I didn't recognize as really about learning and meaning, I'm sure I would throw up my hands and soon declare the problem insoluble. But this of course would be a misjudgment, as it is contradicted by the simple daily facts of the world.

In this talk I wish to take a fairly superficial, perhaps even ignorant or naive, perspective on matters of meaning and learning. I am going to assume that language learners have, at best, access to knowledge of surfacy kinds of linguistic information, and some knowledge of context, and present in overview style some of the challenges learners might face in trying to construct a consistent form-to-meaning mapping. One way to begin thinking about the issue is "from the top", so to speak. The experience of extracting information from natural language utterances is a global one—the experience is that of understanding something you didn't before the utterance event occurred, and that's about it. This does not distinguish for instance among presuppositions, conveyed meanings, implicatures, literal, or metaphorical meanings, nor any other information derived from the utterance, e.g. location, gender, emotional state of the speaker, etc, etc.. Some take this intuition about the unity of our experience at face value—I regard this to be the underpinnings of "holism of meaning", but I and many others believe that messages extracted from natural language are susceptible to analysis, and upon analysis it becomes clear that meaning in toto is composed of a variety of distinguishable factors. Let me draw a parallel: upon hearing a single word, say, the English word "cats" one has the experience of hearing a noise and pairing it with a certain type of animal, very roughly. And that's about it. There is nothing, I believe, in this experience that comes identified as also experiencing "a word", "two morphemes", "a stem", a feature [-sonorant], "Noun", and so on and so forth. Yet, upon analysis it becomes clear that this experience is somehow informed by a constellation of such factors, that all these factors or factors like them contribute their part to the whole. I take it that the experience of meaning is likewise amenable to such analysis, and when one considers the factors it becomes

clear that "meaning experienced" in its broadest sense results from a combination of similar factors, factors that do not wear their rank on their sleeves but which become apparent upon consideration through the lens of theory. When we talk about "semantics", we intend a certain component of meaning, that component which is in some sense referentially based and which is connected most intimately with the syntax of natural language: I'm going to code this as "the truth-conditional" aspect of meaning, a phrase I use here for convenience rather than in its fullest theoretical sense. This is the aspect of meaning which, I believe, is absent from otherwise meaningful objects and events, such as the dark colors in a painting, the rattling sound in my car, music, and, apparently (though I want to be a bit careful here), animal communication systems. However, language clearly conveys meaning in ways in common with such things, as well. Consider a point emphasized in Grice's work on conversational implicatures. He takes pains to point out that these implicatures apply to actions in general, not just the linguistic actions of executing utterances. So, for instance, one can congratulate someone by patting them on the back or shaking their hand, or one can do it linguistically by saying something like "Way to go there, Bob" or by using the stodgy performative utterance "I hereby congratulate you on your success." Meanings of actions then, including linguistic actions, contribute one component to the meaning of the whole. Another type of meaning that is not commonly discussed in truth-conditional approaches is that of connotative meaning, associated with words. To learn a language is to learn, in part, facts like "butt" is a cruder way of making reference to certain body parts than "hind end," and that "derriere" is almost affectedly silly, in most contexts, despite common reference. Such social/emotional meaning is omnipresent in language, and seems most highlighted in poetry, song lyrics, and corporate presentations, but is a type of meaning clearly present in nonlinguistic artistic objects and events as well. Background cultural knowledge also informs meaning. For instance it is not a good idea in English to wish someone a refreshing night's sleep by saying "Rest in peace" as this is a formulaic phrase that used to appear routinely on gravestones. Or, in Norwegian one should not literally thank someone for everything (as one can in English), as the literal translation is a phrase found commonly in obituaries.

My purpose here is not to enumerate or catalog the variety of meanings that the use of natural language gives rise to. Rather it is to make the point that when we begin to talk about the semantics of a quantifier or the scope of tense marking, and how they might be acquired, we are already a long ways from the starting gate in considering the general issue of meaning and language. Meaning comes at us—and people learning a language—from a variety of different directions, at a large numbers of levels, and only one among them is the subject of the kinds of semantic theories I and many others are used to working with. And, apparently, it is a component of overall meaning learners must identify.

Even restricting consideration to this semantic aspect of meaning the difficulty of the problem of learning hardly abates. Obviously, perhaps most obviously, one must learn the meanings of the words of the language (or, a significant subset of them, at any rate), and there are many terrifically interesting learning issues that have been explored within this domain, at least in the area of learning meanings of

the content words, noun, verbs, adjectives, in the main. One absolutely immediate problem that comes up here is that of ambiguity. I would like to point out that the problem, even at the lexical level, is of Godzilla proportions: by one count the 500 most common words of English have among them nearly 9,000 different meanings listed in the OED, or about 17 meanings per entry, on average. Granted, a good many of them are low-frequency or even archaic usages that are learned later in life, if at all, and in context none are remotely that ambiguous. But counterbalancing this somewhat is the fact many ambiguities are not included systematically in this count. Type/token ambiguities are systematically associated with nouns (Hence the ambiguity of "All the machines at the arcade are for sale", whether it is those actual machines, or other individual machines of the same design). Metonymic reference is not reflected there, as the practice commonly cited of waitpersons referring to customers by their orders, resulting in ambiguities in sentences like "The ham sandwich is ready to eat." Many ambiguities of thematic role assignment, which are astonishingly common, are missing. "John shoveled the cement" has the cement either as location cleared, or what was moved, "Sally packed the suitcases" can have the suitcases being put into things, or things being put into them, etc. I don't see how any of this helps a language learner. To pair a new meaning with a word for which you already have a meaning, it appears one must notice there is an error, in the first place, which requires tremendous sensitivity to context <u>and</u> what is appropriate in a context; in the second place one must also localize the error: if one hears "That actor is a ham" and notes that the utterance is wrong in context for the "smoked meat" sense of "ham," why not conclude the error is due to "actor," "that," "is," or "a"? Or what?

But understanding an utterance of a sentence or discourse involves much more than just understanding the meanings of lexical items, and resolving ambiguities within them in context. It involves consideration of the ways the lexical items are combined with one another, and here as is well-known the problem of ambiguity hardly goes away. Also, as we know, the linear order of words can make an essential difference in meaning (“Dogs chase cats” vs. “Cats chase dogs”) but in many other instances there is no difference. (Cf. “Scrambling” structures that appear in most languages, such as “We have food enough for everyone” vs. “We have enough food for everyone.”) But perhaps most interestingly to me, a vital part of this combinatory semantics is ferreting out the contributions of all those "little" words to the meaning of the whole. Considering the contributions of these not so apparently referential things is a central focus of semanticists: what is the meaning of a tense marking, a modal, an indefinite article, a reciprocal expression, "if," "how," "which," what does an infinitive marker do, a plural ending, negation, pronouns?

Consideration of these functional elements of meaning introduces issues concerning the mapping between forms and meaning that are either absent or obscured when one concentrates primarily on the semantics of lexical items or grosser aspects of sentence meaning such as argument structure. Consider one of my favorite examples the Classical Latin conjunctive particle "-que". Latin had this alongside the conjunction 'et', but the syntax of the two was not the same.

"Et" appeared, from a semantic point of view, right where it is supposed to—between the elements conjoined, like most conjunctions we're used to seeing. The enclitic "-que", on the other hand, appeared attached to the end of the first word of the phrase conjoined. Thus in (1) "-que" appears after the first word but signals that the whole phrase is a conjoined element, and not just the word "two":

1. ... duasque ibi legiones conscribit
"...and there he enrolled two legions"

In a slight wrinkle probably driven by prosodic considerations, it appeared attached to the second word if the first was a monosyllabic preposition:

2. ob easque res
"...and because of these things"

If one treats -que as having the meaning of a conjunction, and compositionally combines it with whatever it is combining with on the surface syntax, one would not be able to get these meanings. Instead, one must in some sense raise it up to a higher position in the tree structure, and put it in its rightful place. (This is a lot like QR, of course, with the notable difference that in the case of -que one does not wish to leave a variable behind.) Of course in such examples -que is not in any wrong place—to put it elsewhere would be wrong—because the grammar says it's to be put where it is. But from a compositional semantic point of view, one needs to do some rearranging that one does not have to do with "et," "and," "und," etc.

I'm not raising this as a curiosity, a funny little fact to note and tuck away. The position of -que is of course a Wackernagel position phenomenon, one so common it has a name like that, and it is possible to produce many more similar examples. But the semantic phenomenon of having to "rearrange" elements extends well beyond Wackernagel position particles. Consider how common it is to treat tense, for instance, as both syntactically and semantically a higher-level operator, and for good reason. A very common type of example from English VP deletion will illustrate this point—the deleted VP in (3) does not carry the tense information of the antecedent VP, even though tense is expressed as an inflection on the verb:

3. John <u>wrote a paper</u> because he had to (*wrote a paper).

Or, it appears plurality must be dissociated from the noun it appears attached to, by similar evidence:

4. John has two <u>dogs</u> and Fred has one (*dogs).

It would be quite easy to extend this listing to include a lot of other inflectional categories, as is commonly done in the work on semantics and in syntax both. But let me move on, noting that it is probably extraordinarily common to have functional, including inflectional, elements not, in some sense, in their proper

place. Is this something we're born knowing already? That would help, it seems, but how can one tell?

Coalescence phenomena between adjacent functional elements is extraordinarily common—it is the classic definition as to what is meant by an "inflectional language" as opposed to an agglutinative one. Coalescence may also occur with otherwise free morphemes, as with the preposition/article coalescence found in Germanic and Romance; thus, French "du" is in some sense the equivalent of "de+le". From the commonsense point of view taken here, this probably doesn't present any special difficulties, but there is a similar process that well could, a variant of haplology in which a sequence of two formally identical elements is reduced to one. This does not, to my knowledge, occur with lexical items (thus, "a bare bear" does not reduce to "a bear", meaning, a BARE bear). Consider the case of Japanese -no, noted by Kuno, Radford, and others. It has two quite distinct functions, as a possessive postposition and as a pronoun (meaning something like "one"). If these are juxtaposed, as in (5a), you get an ungrammatical sentence. But there is a nonperiphrastic way of expressing this, namely, (5b), with only one instance of -no. But both the possessive meaning and the pronominal meaning remain:

5. a. *Kore wa anata no no desu ka
   This TOP you POSS one be ?
   "Is this yours?" (lit: "Your one)
   b. (OK) Kore wa anata no desu ka

Again, this is hardly a funny little isolated fact. One can multiply examples by the dozens in familiar and unfamiliar languages alike, and, as usual, when one looks for something like this, it seems to be all over the place. The Swahili negative past 'ku' occurring right next to the infinitival marker 'ku' reduces to a single ku- prefix, yet both meanings remain. In certain Turkish word forms two plurals "ought" to appear in a row, but only one appears, but there are two plurals, semantically (in the case of NP's like "their books" where both the possessors and things possessed are plural). The special problem examples like these raise is that, from a surfacy point of view, you have one element with two meanings, or the same meaning assigned two different scopes, as in the Turkish example. But, I thought it was almost an axiomatic fact of perception that a single form could not be assigned two different meanings. Not only does this apply to lexical items—"He sat by the bank" cannot mean he sat by the river and a financial institution—but this applies to perception more generally—this is Necker cube stuff. This would seem a prime case of putting the learner squarely behind the eight ball, yet, there it is.

We have not only the case of one form with two meanings to be concerned about, but also its converse. Two (or more) forms that add up to a single meaning. One reflection of this is discontinuous morphology. So, for instance, Nida cites the Kekchi example in (6):

6. oc‡coc‡ "house" roc‡oc‡e÷p "their house"

French "ne...pas" would be a possible candidate for a more familiar example. But far more commonly this is found in agreement or concord forms: an agreeing plural article, two plural adjectives, and a plural noun add up to simply one plurality, not four. A definite article combined with the definite form of a noun, still add up to one definite. Multiple negations, as given in the Old English example in (7), add up to a one single negative:

7. Ac he ne sealde nanum nytene ne nanum fisce nane sawle.
and he NEG gave NEG beasts NEG NEG fish NEG souls
"And he did not give beasts or fish souls"

Such examples are so familiar we might easily overlook the language learning problem: if we build a signal-detector that generates an associated meaning upon encounter with a certain type of form, we're going to get extra meanings all over the place which are not parts of the actual interpretation as best we can determine it. Note that the strategy of treating certain forms as meaningless, and localizing the meaning to just one of the forms, may work in some instances but not generally. Let's take a really simple example, the English phrase "These houses". Two plurals, so let's treat the one on the noun as "real". The problem is "These have wooden doors" has a plural subject, semantically and in all other respects, and so does "Houses have wooden doors".

It also appears on occasion that sounds are not paired with meanings. We are all used to work on expletives, so I'll draw on examples from another domain, that of Classical Latin semi-deponent verbs. Latin had a productive inflectional passive marker that normally signaled passivization (i.e. the subject is semantically the direct object), but in many semideponents while the present tenses were formed from the usual active paradigms, the perfect forms required the passive morphology, but without a corresponding effect on passive meaning. Here's a textbook example in (8):

8. audeo "I dare" ausum sum "I dared" (not, "I was dared")

Or, consider the habitual markers that appear in contrafactuals in some languages. In (9) is an example from Hindi due to Bhatt (1997):

9. a. ??Meera do baje bhaashaN de rahii ho-tii (hai)
M 2 o'clock speech give prog be-HAB (Pres)

b. agar Meera kal do baje bhaashaN de rahii ho-tii...
if M yesterday 2 o'clock speech give prog be-HAB
"if Meera had been giving a speech yesterday at 2:00..."

Here, there is no discernible semantic contribution of the HAB marker in (9b), while in (9a) its presence makes the point-time adverbial sound strange (as

generalizations are often odd if given point-time readings), but not so in (9b). English pluralia tanta ("scissors", "pants"), or dependent plurals (as in "Unicycles have wheels") would be possible examples of a plural making no semantic contribution. I'll not go on, but language seems to have many instances of interpretable elements that, in given constructions, bear no such or seemingly any meaning.

Or, what they can do is bear <u>other</u> meanings instead. An illustrative case is the Spanish "spurious se," first discussed to my knowledge in the generative literature by Perlmutter. In sequences of Spanish clitics, if the third person indirect object clitic appears before a third person direct object clitic, it is realized as 'se', which is normally taken to be a reflexive form (though of course it has other functions as well). However, the meaning is not (necessarily) reflexive:

10. Se lo mandas. *Le/Les lo mandas.
"You send it to {him/her}/them"

Again, this might at first appear a funny little fact, but forms that are, from a transformational point of view, mapped to other forms in context are extraordinarily common. Consider sequence of tense phenomena, where a past tense appears in a subordinate clause, but it has a reading contemporaneous with the interpretation of the higher tense as if, semantically, it were a present tense. In preposition/pronoun inversion in Germanic (now lost in English except in frozen forms like "thereupon" or "therefore"), a (neuter) personal pronoun seems expressed instead as a locative, as in German 'damit', 'darauf'. In Greek, we find in certain contexts imperfectives that appear to contribute perfective meaning, as in wishes and contrafactuals. Again, we're not looking at some spotty little curiosities, to my mind, but rather some features which detailed analysis and study show, and will show, recur time and again.

And, finally, and I'll not dwell on this, there are wholesale instances of "silences," of null elements, or elements contrastively omitted, which mean something. We have null pronouns, null determiners, null agreement markers, null anaphoric devices of all sorts. And so we need to somehow sort through those silences that are significant, from those that are not. Let me talk for a time about a line of research in which null and expletive elements play a significant role.

Many languages have as one form of a noun phrase the possibility of there being no overt determiner, quantifier, or other similar element. Languages without articles use such noun phrases extremely commonly, but most languages with both definite and indefinite articles also have them. These most commonly are restricted to mass terms and the plural form of count nouns, and in many languages are restricted in their syntactic occurrences (though not in English). From a linguistic point of view, the absence of a determiner in bare plurals and mass terms invites the notion that there is a null determiner or quantifier present--this is a very natural thing to consider. But, what semantic contribution would this null determiner make to the whole? The answer would change with the context, it appears. In some contexts, it would appear simply to be an existential, as in "I

bought apples at the store" + "I bought some apples...". But in other contexts the contribution would have to be different: "Apples contain vitamin C" does not mean "Some apples contain vitamin C", but something a lot more like all, or most apples.

What's emerged in the past fifteen years or so is a kind of consensus that one should not look to the empty determiner position, if there is one, as a kind of ambiguous quantifier to give a proper account. Rather, the quantificational force is gotten from other elements of meaning in the sentence that the noun phrase combines with; treating them as indefinites within a DRT framework is one way of expressing this view. Some people posit null determiner positions in such noun phrases, other don't. But no one, to my knowledge, is currently wrestling with the question of trying to systematically accord it some lexical contents.

One type of fact that militates, in a general way, against the view that quantificational force should be localized in a null determiner, is the phenomenon of scopelessness. On the existential reading, and on the more general reading as well, these noun phrases do not interact scopally with other sentential elements, such as negation or other quantifiers, to produce the characteristic scopal ambiguities (Here, I'm setting aside a few widely-known exceptions). One could equally well represent these facts with a null determiner, or no determiner at all, at least at this level.

Now one somewhat unfortunate side effect of this line of work has been to pass down as folklore, and I've been responsible for some of this, the idea that bare singulars "don't exist" in languages with articles. Oh, sure, there are a few, but basically "Book fell on the floor", and "I found dog" stand in contrast to "Books fell on the floor" or "I found dogs", and "I was watching television" with its bare singular is an idiom. However, a spate of more recent work (Tom Roeper, Roberto Zamparelli, and Kaja Borthen, among others) has shown the systematicity of these things and, in particular, the semantic affinity of these to bare plurals: they, too, upon close examination are scopeless.

The basic facts seem to be these: bare singulars are both lexically and positionally restricted. So we have contrasts such as those in (11):

11. a. They put him in jail/prison/*penitentiary.
    b. I took my son to school/college/*university (Am Eng)

Generally, they follow verbs or prepositions, but may appear occasionally as subjects of certain verbs:

12. a. Prison has little to offer in the way of recreation.
    b. College is a good place to learn.

They may not be modified (unlike bare plurals):

13. a. They sent him to *(big) jail.
    b. I watched it on television *(that had a 31" screen)

However, in conjunct cases and a couple others, the lexical restrictions are eliminated or reduced:

14. a. University and highschool alike require much study.
    b. Neither television nor radio have become educational tools.

Impressionistically, these structures appear to share many of the positional constraints of bare plurals in Spanish and Italian that have been analyzed as properly governing an empty D position, and they seem to share the lexical constraints of incorporated and incorporation-like structures found in other languages.

They appear to be non-referential, in the following way. Consider a situation in which Bob is watching television. There's a definite TV he is then watching, and one can refer back to that TV: e.g. by continuing "...and then he turned it off and went to bed". However, if we use this sentence as the antecedent of VP ellipsis, consider the result:

15. Bob was watching television, and Fred was, too.

There is no reading of this where both had to have been watching exactly the same TV set. This is what you'd expect if "television" were treated as a narrow-scope, nonspecific indefinite.

Now consider cases involving definite noun phrases. If we use VP ellipsis in such cases, identity of reference is preserved.

16. a. Bob attended the old brown school, and Sam did, too.
    b. Max liked the Brecht play a lot, and Susan did, too.

Naturally. They went to the same school, liked the same play, because of the definiteness.

However, certain unmodified, lexically-selected nouns seem to work differently:

17. a. Sam is in the hospital again, and so is Mary.
    b. I heard about the riot on the radio, and Sharon did, too.

Sam and Mary need not be in the same hospital, and while Sharon and I heard about the same riot, our radios may well have been different, as if the phrase is indefinite. But we have this definite article, what are we to make of that?

It seems many noun phrases with definite articles work this way in English, but others (such as "the riot") don't. There is a certain amount of work, by Longobardi, and Vergnaud and Zubizaretta, that introduces the notion of "expletive article," one put in to produce a noise in an otherwise empty D position. What I'm suggesting here is that in instances such as (17), there is a reading (the most natural one) where the definite article is expletive: that is, we "really" have an instance of a bare singular in each case, the semantics of which is similar to that of bare plurals.

Whether this is correct or not remains to be seen. My present point is, how could one see through the complexity of language to learn such facts? There would appear to be considerable usefulness in such notions as meaningful things that occasionally mean nothing, and things like null determiners. I better wind up.

From the point of view of linguistic theory, many of the things I have been talking about seem fairly unproblematic. This is because we have ideas about how to resolve many of the mismatches we find between form and meaning. Nevertheless, natural languages, from a commonsensical point of view, seem treacherously designed. We have somethings which mean nothing, and nothings which mean something. We have two things meaning one thing, and one thing meaning two things. We have things in disguise, meaning in highly constrained contexts what something else means that it normally contrasts with. We have things, even if the meaning is a single, normal-seeming meaning, that are put in the wrong place and have to be figured instead for another.

But, obviously, things like this are learned by tens of millions annually. And at this point I have absolutely no sensible ideas about how this could be. In part, because the (vague) common-sense view taken here is clearly not right, and I don't know exactly what to replace it with.

But there is one clear overriding reaction I do have—thinking about how hard a problem all this is makes me very happy I'm not a language learner.

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