Theta Theory (HH on Williams) **Ling 522** Jan. 30, 2002

1. Argument of

1. Predicates are expressions of properties that hold of one or between two or more arguments. The prototypical predicate in natural language is a verb, but elements of all category are predicates, really:

a) One place predicates:
   V: Mary arrived.
   A: Mary is happy.
   N: Mary is a cat.

b) Two place predicates:
   V: Mary knows Bill.
   A: Mary is afraid of Bill
   N: Mary is a sister of Bill's.
   P: Mary is with Bill.

c) Three place predicates:
   V: Mary gave Bill a book.
   A: ?
   N: ? The book is a gift of Mary's to Bill?

d) Four place predicates:?
   V: Mary sold the book to Bill for $50?
   (MPP: *swap, trade, exchange. *reciprocate*[1]!)

2. For many predicates, it's obvious how many arguments they take; leaving any of them off results in ungrammaticality, and adding extras does as well:

a) Mary loved Bill.
a') */?Mary loved.
a'') *loved Bill.
a''') *Mary loved Bill death. (but cf. "Mary loved Bill to death").
b) Bill arrived.
b') *Bill arrived the station.
b'') *arrived.
c) Mary put the book on the table.
c') *Mary put the book.
c'') *Mary put on the table.

3. But for others, it's not so obvious. Some things that seem like they might be arguments are optional. Worse yet, habitual aspect makes some argument omissions much better (notice the ? choice for *Mary loved* above):

a) Mary hit Bill (with her fist).
b) Mary hits.
c) Mary gave Bill a book.
d) Mary gave a book.

[1] Notice that the sentence [*Mary*] *reciprocated [John's gift of a book] [with dinner out]* we have only three arguments… plus I'm not sure that this is tremendously grammatical anyway. ☺

e) Mary gave to the homeless.
f) Mary gave. (but note: ??Mary wears)

4. But it seems in general that we have an intuition about how many arguments a predicate fundamentally has. Optionality is an indicator, but not the be-all and end-all. Essentially we understand *how many entities* must be involved in a situation in order for that situation to be characterizable as one of giving, knowing, hitting, sisterhood, etc. If there's not two entities involved, it's not possible to describe it as a *hitting* situation. If there's not three entities, it's not a *giving* situation, etc. Our categorization of situations tells us how many entities must be involved. Other principles must decide whether all of those entities must be overtly realized in the syntax. Note that when an "essential" argument is omitted from the argument structure, it tends to get a generic interpretation as "the sort of thing that normally occurs in that argument slot." So if I say, "John ate," it's unlikely that I mean he ate a rubber boot; more usually "some meal" is understood.

5. Some kinds of entities or information are *always* necessarily involved. Situations occur in space and time, and hence may always be characterized with a temporal or locative adverbial. Situations may vary in a set of ways roughly characterizable as *manner*; they may always be modified with a manner adverbial/adjective as well. These elements, when included, are always adjuncts, and always optional.

6. There's still a grey area, though. Is an instrument a necessary part of the action of hitting — could it *be* hitting if no instrument was involved? (Probably — consider *the car hit the wall*). Is a monetary amount a necessary part of the action of selling, along with a seller, a thing sold, and a buyer? (Probably — otherwise it'd be giving). (Notice that here we run into a problem distinguishing lexical knowledge from encylopedic knowledge!)

7. Some generalizations about argument realization, though:

a) it seems generally impossible for more than three arguments to be *required* in the syntax. For verbs with 4 arguments,

i) *all four* are never required — one or more are always omissible:
Mary swapped (Bill) her watch for a jacket.
ii) it always seems as if there are two "theme" arguments, one of which is exchanged for the other. In some sense, these verbs always seem to involve "splitting" a theme into two interchangeable parts.

b) it seems generally impossible for more than three arguments to be directly case-licensed by the verb in the syntax. (Note that by "directly case-licensed" I mean for more than three to receive *structural* case. In case-marking languages, certain morphological cases are structurally and semantically equivalent to prepositions. What is impossible is for more than three structural cases (i.e., passivisable, ECM-able cases) to be licensed by a single verb.

c) certain kinds of argument seem to always be realized with prepositions (or morphological case), never with structural case: e.g. instruments.

d) all NPs must be in a sentence for a reason, and one canonical reason is to be an argument. (Note: all NPs must also be case-licensed — what was formerly known as the

Case Filter. The former requirement is a semantic one, which is imposed by Full Interpretation; the latter is a morphosyntactic one).

8. Williams says the minimum necessary amount of theta-information is "a list of distinguishable arguments, A',…A'" for each verb" (by which he means "for each predicate.") This overlooks a great deal of theorizing about *types* of arguments, and generalizations that can be made across argument types. For future reference, here are some basic theta roles (and see discussion of UTAH/UAH later in the handout):

Agent: Often used to just mean "causer" or "initiator". The argument that initiates the event. In its strongest sense, it must mean *volitionally* initiated the event. So for theorists who make the distinction, the subject of *kill* can be either an Agent or a Causer (compare *The poison killed Bill* with *Mary killed Bill*), while the subject of *murder* can only be an Agent: **The poison murdered Bill* vs. *Mary murdered Bill*.)

Causer: see above

Theme: Often used to just mean "non-agent participant"; sometimes subsumes Patient. Sometimes more specifically used to mean "undergoes change of state". In the latter definition, *the chair* in *Mary hit the chair* is a Patient but not a Theme; but in *Mary broke the chair*, it's a Theme. Themes often undergo changes of location: *Mary passed the salt to Bill*, the Theme is *the salt*, undergoing the Location change-of-state.

Patient: see above.

Goal: The endpoint of any motion, metaphorical or literal, that is entailed in the verbal meaning. Sometimes distinguished from Possessor, which has often been characterized as an animate Goal or Location. (In *Mary sent the book to France/to Bill*, *Bill* and *France* are Goals; but in *Mary sent Bill the book/#Mary sent France the book*, *Bill* and *France* are Possessors, with the latter being unsuited for the job, as an inanimate entity.)

2 Williams: Obligatoriness and Locality

9. "An NP in a sentence must be an "argument of" some verb."

→ this is not so! closer to true if you replace "verb" with "predicate" (because note: "Mary completed the destruction of the chair with the hammer", *chair* and *hammer* are not arguments of a verb, but of a deverbal noun and a preposition, respectively).

→ might also do to note that NPs in adjuncts are emphatically NOT arguments of verbs (although they probably of adjunct-able predicates like prepositions).

→ might finally note that expletives are usually assumed to crucially NOT be arguments of any verb (although opinions differ)

10. Optionality: Consider the difference between a), b) and c):

a) John tried
a') *John attempted
b) John ate (dinner).
b') John dined (*dinner/on dinner)
c) John devoured dinner.
c') *John devoured.

Is this a difference in theta-role assignment, or subcategorization? And how can we distinguish between genuine absence and (e.g.) presence of a null, generically interpreted *pro* argument?

Erin! important:

11. Rizzi's differences between dropped English and Italian objects:

a)	*A serious doctor visits nude.	(when it's the *patient* that's nude)
b)	A serious doctor visits them nude.	(this still seems weird to me, but much better than (a). Better with *eats*)
a')	*John eats hot.	(where it's the *food* that's hot)
b')	John eats dinner hot.	
c)	Un dottore serio visita nudi a doctor serious visits nude.	

Conclusion: Italian permits *pro* objects (probably licensed by the strong agreement morphology on the modifying adjective: 3msg); English does not. English object drop, then, is something else — either truly optional objects, or some non-adjective licensing. (So probably ok to use these as "potentially intransitive" verbs, maybe?)

12. Williams says some strange things about external arguments. First off, he seems to think that an argument is marked as a SUBJECT in its theta grid, not that being a "subject" or an "object" is a configurational property. Consequently, he asserts the following:

(6b) The "subject argument" of every verb must be assigned to some NP.

→ according to Williams, the "external argument" is distinguished in the theta-grid — but it's labelled "external" (or "subject") by virtue of its phrase-structural position, outside the VP — a bit circular, methinks. If "subject of" was really a configurational notion for him, he wouldn't have to mark a particular argument as the subject *in the lexicon*.

→ if there's not some condition linking "subject arguments" with "subject position", there would be nothing in (6b) to force "subject arguments" to be realized in a particular position — they could be realized as very embedded arguments. (Maybe this is what Williams thinks happens when an expletive comes in and the would-be subject argument remains downstairs).

→ the sort of condition that will do the job is something like Baker's UTAH or Perlmutters UAH (see discussion a few pages down).

13. (6b) above sounds like a sort of backwards version of the Extended Projection Principle, which as usually understood, goes more like this:

The "subject position" in every sentence must be filled by some NP (by the end of the derivation — this does *not* mean that anNP must be base-generated in subject position!!). This distinction will become very important in a minute!

14. (6b) above also sounds like a sort of limited version of the Projection Principle, which goes more like this:

Lexical information (read: theta grids) is projected in the syntax.

(Note: this entails that any change in syntactic projection will have been ***caused*** by a corresponding operation on the verb's theta-grid in the lexicon — it forces the theory to a Generative Lexicon position, or as I like to call it, the Two Engine theory.)

15. The Theta Criterion:

Theta roles must be assigned to one and only one NP
NPs must be assigned one and only one theta role.
(Here "at all levels of representation" *is* appropriate).

16. Locality: Williams asserts that theta-roles are assigned under sisterhood.

but that can't quite be right, because of double-object verbs like *give*: if they're binary-branching, *one* of their arguments will be a non-sister.

So he says theta-roles are assigned under some version of m-command: the relation you bear with other things immediately dominated by the same maximal projection as you. Essentially, theta-roles must be assigned within the verbal projection. Fair enough. Except for the *external* argument; see next section.

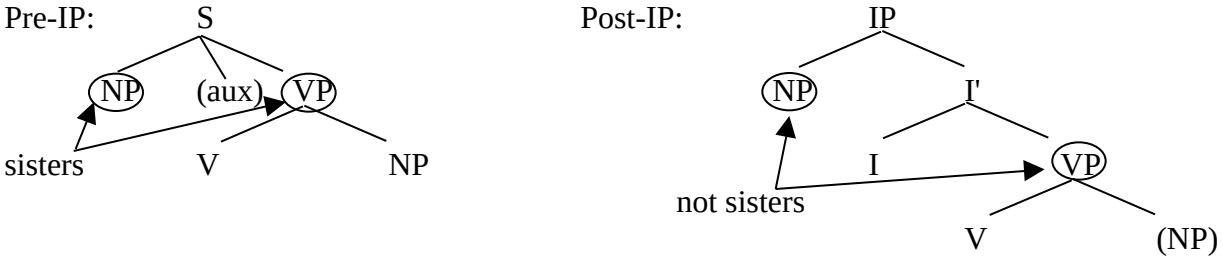
In modern terms, one might say that theta-roles are features that must be checked immediately via External Merge, i.e. by adding another element to the derivation from the numeration. The Theta Criterion/Projection Principle could be rewritten as a particular kind of feature—a theta-feature—that must be checked via External Merge. (This would prevent those features from being checked via Internal Merge, i.e. via movement, which is the sort of thing that the Projection Principle and Theta Criterion were designed to prevent). Note, of course, that such features would definitely be *interpretable* features, not uninterpretable features (the purely morphosyntactic ones). They would need to be checked in the derivation — but not erased from it.

3 External Arguments

17. Williams continues to say strange things about external arguments

"The subject argument has special status: it is not a sister to the verb, but is in fact a sister of the maximal projection of the verb".

→ the only way to understand this is to assume that Williams has not accepted the IP hypothesis… remember the phrase structure rule for sentences? S→NP VP:



Unless he possibly means that they're sisters under m-command, again — but of course this presupposes that there's only one functional projection dominating VP (or at least that subjects are base-generated in the functional projection immediately dominating VP, whatever other ones exist), which these days seems a bit unmotivated.

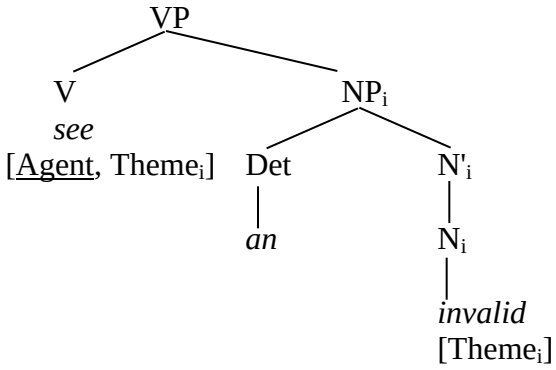
18. He makes (I think) a strange statement about internal arguments too: "…whereas there can be an indeterminate number of internal arguments" — we've seen above that it's really a maximum of 2, 3 if you stretch it.

19. He goes on to assert that the external argument property of a predicate is realized by a coindexing relation between a special index on the predicate that percolates up to the maximal projection of the predicate via X-bar theory, and the binder of that index — typically a subject DP that (in Williams' universe) is a sister to the maximal projection. This works for verbs, of course, but also for any predicative category, giving "small clauses":

a) With John$_i$ [$_{VP}$ gone]$_i$
b) With John$_i$-[$_{AP}$ sick]$_i$
c) With John$_i$ [$_{NP}$ an invalid]$_i$

20. And, interestingly, he proposes that it works the other way too: when an argument is an NP headed by an N head — a predicate —, the external argument of that predicate is bound *by a theta-role* of the verb (or other predicate) that assigns it a theta-role. This is how the referential use of an NP works:

a)



So, a *referential* use of a predicate occurs when the predicate's external theta role is bound by another predicate's *internal* role, and a *predicative* use of a predicate occurs when the predicate's external role is satisfied via the "normal 'argument of' relation" between the predicate XP and a sister NP.

Notice that there's some holes here… what happens when a predicative NP is a subject? What binds its external theta role? coindexation with the verb's external role? Is this a separate process from the "normal 'argument of' relation"? But notice that coindexation of roles is not necessary for theta-role assignment, because by hypothesis pronouns and proper names refer essentially, and they do not have an external theta role to be bound. So it's not clear what coindexation of roles has to do exactly with theta-role assignment. hmm.

21. Anyway, all of this is very nonstandard (although the second half of the story above, about referential predicates needing to be bound by a predicate's theta role, has essentially been borrowed by Baker as the defining property of the category Noun in his new book, which we may look at).

Some [more standard] assumptions
→ On more usual assumptions, reference is a property of DPs, and is constructed somehow from predicative Ns by embedding them within a DP. Theta-role assignment is feature checking (or index assignment, whatever you like) in the direction *verb→DP*, not vice versa.
→ DPs *acquire* subjecthood via movement from a position within the VP (or vP) to a particular position outside it (SpecTP/IP). There are no restrictions on possible subject theta-roles because any DP that can move there without violating some movement-restricting Economy condition may do so.
→Some kinds of arguments are much more likely to be able to get to subject position than others, by virtue of some lexical mapping principle like Baker's

Universal Theta Alignment Hypothesis (paraphrase): Relative positions in the thematic hierarchy are reflected in projection of DPs into the same relative positions in the syntax.

→Assuming that the Theta Hierarchy is more or less as follows:
Agent>Goal>Theme (or sometimes: Agent>Theme>Goal)

→the effect of UTAH will be to ensure that Agents will be projected into the syntax in a relatively higher position than Themes, generally, and as a consequence Agents will be able to move to the subject position without violating Economy principles much more often than Themes.

→ note that there are a number of verb pairs that make problems for this kind of approach, which we'll look at in depth later in the semester: *chases/flees, buys/sells* etc.

4 Passive

22. I'll pass over Williams' discussion of the passive, as it's pretty standard: the basic thing to note is that he adopts the strong lexicalist position (of course), according to which passive is an operation on the theta-grid of a verb that affects how that verb's theta-roles are projected into the syntax (and that incidentally also affects the case-assigning ability of the verb.) In fact, his two-sentence summary of passive is very cogent, and bears remembering:

"In sum, the movement [of object to subject position] is made necessary by the absence of accusative Case, and is made possible by the absence of the subject theta role".

For those of you who aren't familiar with it, Burzio's generalization is a theory that these two properties are mutually dependent: verb has external theta role iff verb has accusative case. I personally think it's empirically false, but it's driven a lot of research agendas over the years that have produced a lot of interesting work.

5 Opacity

I'll just talk about this for a second, because although it's not so much to do with theta theory *per se*, it's interesting — and binding *does* interact with theta-theory somewhat:

23. "Opacity" as used here refers to the property which prevents anaphors from being bound outside their clause if there is an "accessible SUBJECT" in it. (This is part of the definition of "governing category" that occurs in Principle A: anaphors must be bound in their GC, where GC is something that, among other things, contains an accessible SUBJECT). This is meant to take care not only of regular clause opacity effects (24a), but the "small clause" opacity effects that Williams is talking about (24b):

24. a) *John$_i$ thinks that Mary is mad at himself$_i$ (ok *him*)
b) *John$_i$ thinks Mary mad at himself$_i$ (ok *him*)

Williams proposes that it's not the presence of the intervening subject that is relevant to binding theory, but whether or not the anaphor is in a predicate:

25. a) [An anaphor] cannot occur free in XP if XP is a predicate.

As long as the anaphor is coindexed with the DP that the predicate is predicated of, though, then it is not "free in XP". Notice that this will take care of both cases in 24, where in (a) XP=VP, and in (b) XP=AP.

26. So the debate is whether it's anaphors being in a clause with an accessible *subject* that matters, or whether it's anaphors being in a predicate XP that matters. Williams notes that the following data set bears on the issue:

a) John wondered [which picture of himself]$_i$ Mary would like t_i.

b) *John wondered [how mad at himself]$_i$ Mary would be t_i.

Now:

→ *wonder* is a predicate which selects for a [+wh] (i.e. a question) complement.

→ *Which picture will Mary like*? and *How mad will Mary be*? are both well-formed.

→ why is the anaphor *himself*, bound by *John*, acceptable in (a) but not (b)?

27. The subject-opacity approach would predict that whatever the judgement in (a), it should be the same as in (b) because:
I: If, for the purposes of binding theory, movement *reconstructs* (i.e. the wh-phrase is interpreted in its base-position, as if it hadn't moved), then both should be bad, because they both occur in a clause with an accessible subject and yet are trying to be bound *outside* of it, to the matrix subject.
II: If, on the other hand, a moved consituent is moved for the binding theory as well, both (a) and (b) ought to be *good*, because the moved anaphor's governing category is the *matrix* phrase, which includes the accessible SUBJECT John, with which it should be coindexable.

28. But, since (a) is fine and (b) is bad, something else must be going on. Williams points out that his predicate-opacity approach will work. In the (b) example, the fact that the phrase *how mad at himself* is still predicated of Mary, not of John, will entail that Opacity should continue to hold in that case, and the anaphor should be bad (because free in its predicative XP). As for the (a) case, "the reflexive occurs in no predicative XPs except the one predicated of its antecedent [the matrix VP], so the reflexive satisfies the POC".

This theory sounds like a sort of version of Reinhart&Reuland's Reflexivity theory, that came out right about the same time as this paper.

29. There's a way out for subject-oriented theories, though: what if there's a trace of *Mary* in the predicate [*how mad at himself*]? The structure of adjectival predicates, then, would be a raising construction with a small clause (I think this is prob. right, btw):

a) ___ is [$_{SC}$ [$_{DP}$Mary] [$_{AP}$ mad]] → [Mary]$_i$ is [t_i mad]

The trace of *Mary* would then be the accessible SUBJECT that creates the opacity effect in the phrase *John wondered* [$_{SC}$ t_i *how mad at himself*]$_j$ *Mary*$_i$ *would be* t_j.; the moved phrase would be the whole small clause. This only looks good, however, until you notice that the trace of *Mary*, if it moves with the predicative AP, will *not be bound by its antecedent*… violating the Proper Binding Condition — and yet (without the *himself*) *John wondered how mad Mary would be* is fine…