

3. Traditional Problems in Identifying Thematic Roles and Using Them to Distinguish Arguments

3.1 Role Fragmentations and Unclear Boundaries

Of various examples that might be cited of the question how "finely" to divide thematic roles, perhaps Agent is most striking: this is one of the most oft-cited and in some sense a very intuitive role, but it is one of the hardest to pin down. Jackendoff (1983) divides it into Agent vs. Actor, but D. A. Cruse (1973) split it four ways,

- (1)
 - a. *Volitive* "an act of the will is stated or implied" (p. 18).
 - b. *Effective* "exerts a force...because of its position, movement, etc." (p. 19)
 - c. *Initiative* "initiation of an action by giving a command" (p. 20)
 - d. *Agentive* "performed by an object [living things, certain types of machine, and natural agents] regarded as using its own energy in carrying out the action." (p. 21)

and cites syntactic tests to isolate each new role type. Possibly Lakoff (1977: 244) offered the largest fragmentation of Agency ever proposed, in which there were fourteen supposedly distinct characteristics (though properly speaking, some of Lakoff's characteristics involved the RELATIONSHIP between agent and patient, not agency by itself). The dilemma is, if we adopt the finer categorization of roles to achieve certain distinctions, do we thereby not miss generalizations by not being able to refer to the grosser Agent category as well?

Linguists have often found it hard to agree on and motivate the location of the boundary between role types. The sentences in (2) show one example of the difficulties that can be involved:

- (2)
 - a. I walked a mile
I swam 30 meters,
I slept twelve hours.
 - b. This weighs five pounds
The piano measures 6'5".
It took me an hour to grade the papers.
The book cost me \$5.
 - c. I paid \$5 (this amount) (?this \$5-bill) for the book.
The book cost me \$5 (?this amount) (#this \$5-bill).
I bought the book for \$5 (this amount) (#this \$5-bill)

- d. I paid for the book with ?\$5 (#this amount) (this \$5-bill).
I bought the book with ?\$5 (#this amount) (this \$5-bill).
- e. I'll trade this record for the book.

These sentences may involve a little-studied thematic role that has been called *Extent* (Andrews 1985). Note first that in (2a) the phrases *a mile*, *30 meters*, *12 hours* are adjuncts rather than subcategorized elements (they may be freely omitted without lose of acceptability or, apparently, change in the meaning of the rest of the sentence) and have an "adverbial function". Can adjuncts, or adverbs themselves, be assigned a thematic roles? Fillmore (1988) said yes, but there would seem to be room for doubt. If we can assign measures of distance or weight a thematic role, how about measures of rate, as in *He drove the car 50 m.p.h.*? But then where do we stop? E.g. does *too fast* have a thematic role in *He drove the car too fast*, or does *quickly* in *She walks quickly*?

On the other hand, similar NPs are clearly subcategorized argument NPs in (2b), so surely they ARE assigned thematic roles here, and their meaning seems quite parallel to (2a): If we say these NPs have thematic roles in (2b) but not in (2a) (contrary to Fillmore, I presume), then it seems we ignore the semantic parallelism and say that it is a matter of syntactic form, not the meaning of a sentence alone, that determines what thematic roles are involved. (Perhaps indeed this is the correct conclusion, but the concept of thematic role becomes quite a different one if the conclusion is accepted rather than rejected, and if we cannot use meaning alone to decide thematic assignment, then we need to justify *which* syntactic differences we allow to indicate role differences and which we do not.)

What do we make of the differences between (2c) and (2d)? *five dollars* and *this amount*, like *a mile*, etc., seem to refer to an measurement of monetary quantity (in the abstract), while *this five-dollar bill* refers to a concrete object, a piece of paper that has such a value. So perhaps the correct thing to say is that the verb forms in (c) make reference to the measurement (and have the Extent role) while those in (d) refer to a physical quantity of currency (and have some other role, say Theme, parallel to (e)). The break, however, is not quite that clean. One can also say *That bad investment cost me my house in the country* (where *my house...* is not merely an Extent NP). And in the temporal domain, we have *John spent Tuesday writing the paper* as well as *John spent an hour washing the car* (suggesting *Tuesday* can express Extent, though cf. *#It took John Tuesday to wash the car*).

But the confusing part is about (c) and (d) is that in the common commercial transaction there exist BOTH a concrete pile of currency that changes hands AND a particular measurement of value that this currency has (except that in purchase by check or credit card, the former may be absent in concrete form, yet presumably there is still a "virtual Theme" of currency). So, we wonder, by analogy to Jackendoff's

analysis that *butter* has a Theme "expressed by the verb", should we say the Theme is verbally expressed in (2c) and the Extent expressed by the NP, while the reverse is true in (2d)? Or are Theme and Extent mutually exclusive in these sentences? How do we decide?

Perhaps these questions do have consistent and justifiable answers obtainable by diligent research. But the point is, thematic role-type assignment is, at best, not always transparent. Surely Jackendoff would agree, and he has constructed some very intricate arguments for some rather non-obvious assignments. For example, Jackendoff, following Gruber, says *money* is NOT the Theme in *Nelson ran out of money* and *Fred came into a lot of money*, but rather the Goal (Jackendoff 1976: 134), so Theme is not always simplistically "that which moves or changes". And for Jackendoff and Gruber, *The circle surrounds the dot* has Theme as subject and Location as object, but in *The circle contains the dot*, the subject is Location (1976:97-98), even though elsewhere, the subjects of locative sentences seem consistently to be Themes (e.g. in both *x is to the right of y* and *y is to the left of x* (1976:98)). This is not to deny either that Jackendoff presents arguments for these assignments which have their appeal or that his resulting analysis is self-consistent, but it is only fair to observe that other linguists, having somewhat different methods and emphasizing different data, can come up with reasonable but different assignments.

The methodological dilemma in the view that thematic role type identification cannot be made from meaning alone but can be affected by syntax as well is that it all but excludes it from the possibility of empirical falsification. That is, when it is pointed out to a syntactician that there is a semantic inconsistency in her appeal to a certain thematic role in her analysis of a new syntactic construction, she can reply that this is simply one of those cases where syntax or the existence of certain lexical items, as well as purely semantic criteria, determine role-type distribution. Of course, in principle there MIGHT be an independent way to validate or falsify such a claim with further data, but in practice this independent justification can be hard to find, so that appeal to roles in this not-strictly-semantic way seems perilously close to the "wild card to meet the exigencies of syntax" that Jackendoff himself cautions us about.

3.2 Cases Where There May Be No Motivatable Role That Can Distinguish Two Arguments

Another familiar problem with thematic roles, which is the complement of the previous one (and would be fatal for argument indexing by role type), is the case where two arguments of the same verb do not seem to be distinguished from each other by any entailments that the verb produces whatsoever, and if so, there can of course be no motivation for assigning distinct roles to them on semantic grounds:

among the clearest examples are probably symmetric stative predicates as in (3):

- (3) This is similar to that
equal to
near
resembles
weighs as much as

That is, if this is similar to that then that is similar to this and vice-versa, with no apparent asymmetry in what is predicated of the two arguments on which to pin a distinction in role type. The same difficulty arises with conversely entailing predicates, e.g. *x is to the left of y* and *y is to the right of x*. (That there might in fact be a subtle difference in subject vs. object that signifies a role difference both here and in (4) below, say a difference in "perspective", is a position I will address in §5. below.)

Another familiar conundrum of this kind is verbs which refer to commercial transactions such as *buy*, *sell*, and similar verbs, e.g. *rent*:

- (4) a. John sold the piano to Mary for \$1,000.
b. Mary bought the piano from John for \$1,000.

As Jackendoff (1987:381) and many others have noticed, both buyer and seller must act agentively (voluntarily) whenever such a transaction takes place, and one or the other (or both) must act to effect transfer (signing names, or moving or taking the object or the money, the meaning of the verb being indifferent to how the change of possession is caused, as long as both participants desire both reciprocal transfers of possession to occur), and there is no obvious reason why either is entailed to act "more agentively" than the other. (Likewise, both currency and the purchased item necessarily change hands, so there is a danger that there are two Themes for such verbs, as well as a Goal and a Source for each transferred entity, namely the buyer and seller in each case.) Of course, such verbs in fact distinguish the two agents semantically according to which acquires the quantity of cash (or equivalent medium of exchange) versus which acquires the desired object of some other kind, but labeling such a difference a "thematic role" seems ill-motivated; it would violate what I think is an implicit principle that we should not postulate a thematic role-type that is limited to only one or two verbs (or a small set of near-synonyms) but expect each role-type to be applicable to a reasonable range of verb meanings.

3.3 Pitfalls of Misidentifying the Motivation for a Role:

Though not an inherent problem in the concept of thematic role nor an

insurmountable barrier to identifying roles empirically, it is worth pointing out that a significant practical problem with correctly identifying evidence for particular role types has been the ease of confusing generalizations that should be stated in terms of thematic roles with generalizations of other kinds --- either purely syntactic generalizations, semantic generalizations (other than ones involving thematic roles *per se*), or pragmatic generalizations. These pitfalls should be kept in mind by anyone who reads the literature critically for evidence pertaining to the phenomenon.

3.3.1. The generalization in question is actually a purely syntactic one.

As an example of what at first appears to be a thematic role generalization turning out to be a purely syntactic one, note that Anderson (1977), Wasow (1980), Williams (1980), and Bresnan (1982) have all put forth the hypothesis that English lexical passives, such as the "un-passives" in (5) are only grammatical when formed on Theme objects:

- (5) a. A new car was sold to the customer.
The customer was sold a new car.
- b. an unsold car
*an unsold customer

But the correct generalization is that lexical passives can be formed from all and only the lexical monotransitive verbs in English (Levin and Rappaport 1986), that is, from verbs that can appear with one object NP and no other complements in their active form, regardless of the thematic role type of this NP. The data in (6) illustrates this. (This particular generalization, incidentally, is predicted to hold by the categorial theory of lexical rules and relation-changing rules in Dowty (1978)¹

¹The theory of lexical rules in Dowty (1978) entails that lexical rules are defined over the same system of categories and expressions as syntactic rules are, with one key difference being that only the *basic* (i.e. lexical) members of a given category can be inputs to a lexical rule applying to that category, while both basic and syntactically derived (i.e. complex) expressions of that category can be inputs to a syntactic rule applying to that same category (this being, like other versions of Montague Grammar, a theory in which any category can have both lexical and syntactically complex members). A claim about English made in that paper is that it has both a lexical and a syntactic passive rule, each applying to the category of transitive verbs (possible phrasal ones, for the syntactic case). A ditransitive verb combines via syntactic rule with a NP to form a (phrasal) transitive verb; for example, *sell to the customer* and *sell a car* are phrases of this category, which, if combined with direct objects, give rise to examples such as *sell a car to the customer* and *sell the customer a car* (via "wrapping" operations); by using the phrasal TV's instead as input to the (syntactic) passive rule, the intransitive VPs *be sold to the customer* and *be sold a car* are produced. The lexical passive rule cannot apply to the ditransitive *sell* directly, since the rule is defined only on TV, not on the ditransitive category TV/T, and by the aforementioned principle,

- (6) an unsold book (*cf.* John sold the book)
 *an unsold customer (*cf.* *John sold the customer)
- *an unfed hamburger (*cf.* *John fed the hamburger)
 the unfed children (*cf.* John fed the children)
- the unserved soup (*cf.* the waiter served the soup)
 the unserved customer (*cf.* the waiter served the customer)

3.3.2 The correct generalization is in terms of some semantic distinction other than one characterized by a thematic role type.

As an example of this sort, Rappaport (1983:131) proposed that "no derived nominal inherits the argument structure (AGENT, EXPERIENCER) from its verb". This is supposed to explain the ungrammaticality of the *by*-phrases in derived nominals of the psychological verbs in (7):

- (7) Amy's fright (*by the scarecrow),
 The class's boredom (*by the lecturer),
 Deborah's amusement (*by Randy),
 Sam's annoyance (*by Dave)

However, Rappaport also noted that such derived nominals are always understood as referring to states rather than events, and she considered the possibility of stating this generalization in terms of stativity rather than in terms of thematic roles, the idea being that the *by*-phrases would be incompatible with a stative interpretation. But notice that the restriction against non-stative interpretations is needed independently to explain why adverbials implying an event-interpretation are ungrammatical with such nominals, as in (8), even though no Agent is present syntactically and even, as in the second example, there is an adjective like *unintentional* that excludes the understanding that an Agent was involved, syntactically present or not. Hence the stativity restriction is preferable to one in terms of roles.

a lexical rule cannot apply to the syntactically complex phrase *sell a car* (even though the category would be right); a lexical passive would therefore be possible for such a verb only if that verb independently had its valence reduced from ditransitive to transitive by another lexical rule. Now there are two ways to convert a ditransitive to a transitive---by suppressing the "Goal" argument or suppressing the "Theme" object--- and English has both kinds of "monotransitivizations" (*cf.* right-hand column in example (6)). But as can be checked from that data, the lexical passive is, as predicted, possible only if the corresponding "monotransitive" form exists with the appropriate argument omitted from the ditransitive, no matter whether the remaining argument is Theme (as with

- (8) the boredom of the class (#that happened ten minutes after the lecture started)
 the unintentional fright of the children (#that occurred when they saw the scarecrow)

3.3.3. The generalization is actually a pragmatic one.

Third, a generalization that appears to be describable in terms of roles can turn out to pragmatic in nature. Jackendoff (1972, 1987), Grimshaw (1975), Williams (1980), and Nishigauchi (1984) have proposed that the control of null subjects (N.B. *not* the object gaps) of infinitival relatives and transitive purpose clauses, e.g. in (9),

- (9) John bought a book to read to the children.
 John bought Mary a book to read to the children.

is determined by thematic role or by a thematic role hierarchy (*Goal > Source/Location > Theme*). But Ladusaw and Dowty (1988) presented counterexamples to this hypothesis in the form of structurally and semantically parallel sentences which allow different NPs to control the infinitive. Following Bach (1982), we argue that extra-linguistic practical reasoning determines the control in these cases--i.e. reasoning about who would have what object at his/her disposal at what point in the action². One vivid illustration of this is the example in (10) (a kind suggested by Bach), in which the subject controller can be understood as the addressee and speaker together.

- (10) Here is a bottle of wine. I brought it to drink with our dinner.

A revealing example from Ladusaw and Dowty (1988:68) is (11) (i.e. the italicized purpose clause):

- (11) John has been spending the night at Mary's house a lot lately and using her toothbrush, which irritated her a great deal. So to appease her, John bought Mary a second toothbrush *to brush his teeth with when he stayed at her house.*

Normally the Goal, or person who ends up as possessor of the object at the end of the action (here Mary), is the subject controller of the purpose clause, since that person will be in a natural position to use it for some future purpose. But our

sell), Recipient (*feed*) or whether both possibilities exist (as with *serve*).

ability to understand the unusual situation in which the owner of an object is different from its intended user is what permits us to naturally take the NP *John* as the controller in (11), in violation of generalizations in terms of role hierarchies. (One can also obtain the other control reading of this last sentence by putting it in a context where it is assumed that John customarily has Mary brush his teeth for him.) See Ladusaw and Dowty (1988) for further examples and discussion.³

3.3.4. The phenomenon in question is a consequence of general constraints between syntax and discourse structure.

A possible instance of this category of misidentification, a second kind of pragmatic case, would be the status of roles such as Figure and Ground discussed in §5 below.

² But N.B. Ladusaw and Dowty make this claim is only about infinitival relative and purpose clauses, not control of the complements of *try*, *promise* *persuade*, etc., which is acknowledged to be syntactically governed, although ultimately a connection to "practical reasoning" is surely involved even here.

³ This paper is criticized by Jones (1988), who shows that our claims about the verb *rob* are either wrong or, at best, in need of further explanation. However, Jones makes no comment about (11) at all. His solution to the observed variation in position of the subject controller of transitive purpose clauses is to posit a new thematic role *Location*, also characterized as "eventual possessor", which is assigned to the direct object in *John bought it* but not in *John bought it for Mary*. But surely our understanding of the difference in "eventual possessor" in these two examples is due to implicature, not the lexical meaning of *buy*, and such capriciousness in syntax-meaning correspondence as this role would need to display is not motivated elsewhere in the literature on roles. More important, the notion of "eventual possessor" is exactly what is relevant to our understanding of the control in examples like (10) as well, though no true "thematic role hierarchy" generalization can cover (10) and the other examples, since the controller in (10) is not an NP in the sentence. Thus I believe that while "eventual possessor" is a good intuitive description of how we understand these controllers, Jones' proposal only really makes sense as the pragmatic solution of Ladusaw and Dowty under a new name, not as a true "thematic role" analysis.

(Incidentally, Jones' discussion of obligatory control (with *try*, *promise*, etc.) does not seem to recognize that Ladusaw and Dowty take the position that obligatory control is grammatically fixed (just as Jones' own position holds) and only motivated by parallel semantic-pragmatic patterns, which to be sure in very rare cases seem able to "overrule" grammatically fixed control with partial success.)