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*Proceedings of the Thirteenth Annual Meeting of the Berkeley Linguistics Society* (1987), pp. 460-472

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## On the Linguistic Function of Event Roles

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1. Thematic relations have a status independent of language, based in the human cognitive capacity for individuating acts or states. They form an integral part of the definition of particular acts and states, and as such are assigned to mental representations of objects and concepts. This is the "defining function" of the thematic roles; it crucially involves the content and definition of particular roles. Thematic relations also function in a linguistic capacity where both their specific semantic content and the domain in which they are represented are significant in the explanation of language-dependent phenomena. This is what is meant by the "linguistic function" of the roles.

In their defining capacity, thematic relations have (minimally) a dual status. They are related both to perceptual structure and to the structure of events.<sup>1</sup> The human cognitive capacity of distinguishing objects, and of perceiving their physical properties and their motion in space, must be accounted for by a theory of perception. The capacity to identify objects as involved in certain individuatable acts requires a cognitive theory distinct from that involved with the perceivable properties of objects and their motion. This requires a cognitive theory of events.

Both the theory of perceptions and the theory of events are relevant to the defining function of thematic relations. Perceptual theory, categorizing objects as physical entities in terms of their perceivable properties, is concerned with (among other things) the movement of objects in space, and this theory gives rise to the set of roles discussed by Gruber (1965). For instance, Theme is defined as the object that changes position or state. Location, Source, and Goal are defined with respect to the movement or position of the Theme object. The theory of events, on the other hand, is concerned with objects and their status as actors in some identifiable action. Whether an actor is an Agent or a non-volitional Instrument cannot be determined solely on the basis of perceived movement through space. Only a theory of human action can capture facts about volitional acts. The theory of events gives rise to roles such as Agent, Patient, Instrument, and Bene-

factee.<sup>2</sup>

In this paper I will focus on the linguistic function of the event roles. I take it to be amply documented that the recognition of perceptual roles in linguistic theory leads to significant generalizations, for instance about the distribution of prepositions and adverbials and the decompositional semantics of lexical items (see, in particular, Gruber 1967; Fillmore 1968; Jackendoff 1972, 1983, 1987; Talmy 1975, 1983, 1985; and Rappaport and Levin 1987). I also take it to be well established that the local domain within which thematic roles are assigned must be recognized in determining the scope of certain grammatical phenomena, hence discussion of the Theta Criterion and theta role assignment in Government Binding Theory, and the importance of the thematic level of R-structure in the Locality Theory of Culicover and Wilkins (1984, 1986, and Wilkins 1987a,b).<sup>3</sup> Here I will show that the content of the event roles must be recognized in the explanation of certain linguistic phenomena. The success of the proposed account will be taken as evidence both that the semantic content of the roles is relevant to linguistics and that the distinction between the two sets of roles is well-motivated.

Before turning to the constructions to be discussed here, there is one clarification I must make. I am assuming that there is a level of thematic structure in which roles are associated with representations of individuals. At this level, in the unmarked case, the representation of each individual is associated with at most one role from each set of roles in the domain of a given role assigner. For the purposes of the analysis, it is irrelevant whether thematic structure exists as an autonomous level, or whether it forms part of some broader aspect of semantic interpretation, say, Logical Form. It is also irrelevant to the issues at hand whether it is formed by its own independent rules of combination or by a mapping from some other level, such as, for example, lexical or syntactic structure. Finally, thematic structure might be derivable from either conceptual structure (see Jackendoff 1983, 1987) or from verb entailments (Ladusaw and Dowty, 1987). The important point is that, in a derivation, there will be a representation of the assignment of roles to individuals within the domain of each role-assigning entity; and the rules of grammar will be able to refer to this representation.

2. Let us turn now to rules, whether lexical or

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syntactic, that have to do with the assignment of thematic roles to particular grammatical relations. We will be most interested in constructions in which there is some apparent variation in the argument structure of certain verbs. Following Bresnan (1982), let us refer to this as polyadicity. Middles and ergatives, in the sense of Keyser and Roeper (1984), are good examples of this phenomenon.

- (1) a. The sailors sank the boat.
- b. Middle: Boats sink (easily).
- c. Ergative: The boat sank.

As (1a) shows, the verb sink is transitive, dyadic, in that it can occur with both a subject and direct object. In this case the subject the sailors is the volitional actor, initiator of the event of sinking, and would be assigned the role Agent in thematic structure. The boat, the object in this case, is Theme because it is what undergoes the movement designated by the verb. It also bears the event role Patient. Patients are objects that undergo a change of state (see discussion of the feature [+affected] in Lebeaux 1987) in events caused by an Instrumental something or an Agentive someone. As Jackendoff (1987) suggests, a test for Patient is the ability of an NP to appear in the frame (2).

- (2) {What happened / What Y did} to NP was ...

The fact that the boat is Patient in (1a) is corroborated by the grammaticality of (3).

- (3) a. What happened to the boat is that it sank.
- b. What the sailors did to the boat was sink it.

In the middle and ergative sentences of (1) sink occurs as a monadic predicate. It is well-formed in a structure with only a single argument. In these cases, the subject, rather than being an Agent as in (1a), is a Patient:

- (4) a. What happens to boats is that they sink. (cf. (1b))
- b. What happened to the boat is that it sank. (cf. (1c))

Keyser and Roeper informally utilize the term Agent

in referring to the role of the missing argument in these constructions. In fact an additional semantic role relevant in characterizing grammatical middles and ergatives is the one borne by the object in the associated transitive form. Considering first the ergatives, we see that the NP in surface subject position must be assigned Patient in thematic structure. Compare the examples in (5) with those in (6).

- (5) a. The door closed.  
 b. The ice melted.  
 c. The bone fractured.
- (6) a. \*The room entered.  
 b. \*The books received.  
 c. \*Greek translates.  
 d. \*The book reads.

The ungrammaticality of all the cases of (6) is due, at least in part, to the fact that the subjects are not Patients:<sup>4</sup>

- (7) a. \*What happened to the room is that John entered it.  
 b. \*What happened to the books is that John received them.  
 c. \*What happened to (the) Greek is that John translated it.

That the constraint on ergatives should mention Patient, rather than just unexpressed Agent, is supported by ungrammatical cases like (6a,c) where the related transitive would have an Agent subject, as in John entered the room or The interpreters translate Greek. This is also supported by Keyser and Roeper's -ize verbs that lack ergative forms even though they have Agent subjects in their transitive forms.

- (8) a. \*The expenditure authorized.  
 b. \*That young man demoralizes.  
 c. \*An appropriate answer visualized.

To the extent that Patient is useful in characterizing possible ergative verbs, I take the role to be a useful construct in linguistic theory.

Turning now to middles, there is more evidence for the importance of an event role in grammar. Compare (9) and (10).

- (9) a. Bureaucrats bribe easily.

- b. This floor waxes easily.
  - c. Greek translates easily.
  - d. This book reads easily.
- (10)a. \*Books receive easily.
- b. \*Rooms enter easily.
  - c. \*French acquires easily.

The subjects in (9) are Affected objects, whereas those in (10) are not. I suggest that Affected belongs in the set of event roles and is distinct from Patient. Hence, there are contrasts such as (6c,d) vs. (9c,d). Middles require an Affected subject; ergatives require a Patient. This also accounts for (11) as compared with (8b).

- (11) That young man demoralizes easily.

The object of demoralize is Affected, but not Patient; the middle is grammatical but the ergative is not. This also explains (12).<sup>5</sup>

- (12)a. \*That expenditure authorizes easily.
- b. \*An appropriate answer visualizes easily.
  - c. \*The multiplication tables learn easily.

These examples are ungrammatical because the surface subject could not be Affected in the domain of the verb. In a sentence like The children learned the multiplication tables, the assumption is that the multiplication tables are not affected by the learning. All Patients are Affected objects, but not all Affected objects are Patients.<sup>6</sup> This would explain, partially, why Ergative Formation is more restricted than Middle Formation.

A final point to be made here about middles is that any account of their distribution simply in terms of some lexical property, such as whether or not the verb, or some verbal morphology, absorbs or assigns objective case, will necessarily be incomplete. The distinction between (13b) and (13d) depends on what thematic role may be assigned to the underlying object, as in (13a) and (13c), not just on whether the verb absorb can casemark an object.

- (13)a. Marble absorbs oil easily.
- b. Oil absorbs easily (into the marble).
  - c. Good students absorb information easily.
  - d. \*Information absorbs easily (into the students).<sup>7</sup>

This means that middle formation is not, as Keyser and Roeper claim, "fully analogous" to passive formation. Middles are thematically more restricted:<sup>8</sup>

- (14)a. Oil is absorbed easily by marble.
- b. Information is absorbed easily by good students.
- c. The books were received by the reviewers. (cf. (10a))
- d. The room was entered by a mob of reporters. (cf. (10b))
- e. French was acquired by educated Russians. (cf. (10c))

While Passive might be restricted by certain thematic conditions (see Jackendoff 1972, Lebeaux 1987), they are certainly not the same conditions that are relevant for middles.

3. Next we consider the rule of Resultative Formation Carrier-Duncan and Randall 1986). This rule is illustrated in (15).

- (15)a. The rooster crowed the children awake.
- b. The king laughed himself silly.

Predications in structures with transitive verbs often involve results:

- (16)a. We painted the barn red.
- b. We smashed the pitcher to pieces.

A result reading for a predication generally requires Agent-Patient or Instrument-Patient thematic structure. This is illustrated by (17a). But we will concentrate here on resultatives that affect the adicity of the involved verb, i.e. those that add an object onto an otherwise intransitive main predicate, such as (15) and (17b). Both examples in (17) show that the subject must be an Agent or Instrument<sup>9</sup>:

- (17)a. \*The editor received the manuscript torn.  
    (\* = resultative)
- b. \*John slipped himself bruised.

Example (17a) is ungrammatical because the subject is a Goal and is neither Instrument nor Agent; (17b) is out because the subject is a non-Agentive Theme. Notice

that Theme is perfectly grammatical as the subject as long as it is Agent or Instrument as well:

- (18)a. John ran himself ragged.
- b. The dull knife hacked the sandwich to crumbs.

There are also event-role constraints on the newly-created object. Consider (19) and (20).

- (19)a. \*Van Winkle slept himself refreshed.
- b. \*The speaker continued {us/himself} bored.
- c. \*The neighbors {stayed/remained} themselves unwelcome.
- (20)a. \*The hero exited the stage empty.
- b. \*Father departed the children destitute.
- c. \*Mary left herself lonely.
- (\* = resultative)

All the ungrammatical examples in (19) have stative main verbs. The relevance of this to the issue at hand is that verbs that simply describe the state of their subject cannot be interpreted as affecting some object in any way. In all the acceptable resultatives the object is interpreted as Affected by the verb.<sup>10</sup>

Support for this claim is derived from the fact that resultatives with intransitive bases can undergo Middle Formation:

- (21)a. Children crow awake easily (out on the farm).
- b. Horses run ragged easily (on the beach).
- c. Women's feet walk to pieces easily (in high heels).

The ungrammatical cases in (20) have verbs whose subjects are Themes (and Agents) involved in a movement away from somewhere (or something). The objects in these cases could only be interpreted as Source, and would not be Affected. Unaffected Goals are also excluded from object position in a resultative:

- (22)a. \*Rambo arrived the scene violent.
- b. \*The crowd entered the room full.
- c. \*The teacher approached the children nervous. (\* = resultative)
- d. \*Harrison crashed the party noisy.

In light of the data thus far presented, I would

argue that the set of verbs that can undergo Resultative Formation is not randomly constituted. There is a thematic restriction on both the subject and the newly-created object.<sup>11</sup> The subject must be an Agent or Instrument, and the object must be Affected.<sup>12</sup>

4. We move next to a brief consideration of the Tough construction. I include these sentences in the discussion of polyadicity because the non-it subject of the tough-class predicate actually plays a role in the embedded domain (binds an e in that domain) while it occurs as the subject of the semantically monadic predicate of the matrix clause. Compare (23) and (24).<sup>13</sup>

- (23) a. Ben is tough to see [e].  
 b. Robert is pretty to look at [e].  
 c. Mary is ready to visit [e].  
 d. Mary is too stubborn to visit [e].  
 e. His brother was pleasant to leave [e].
- (24) a. \*The man was hard for Mary to find [e] sick.  
 b. \*The money was tough for John to lack [e].  
 c. \*The boss was nice for Bill for Sam to talk to [e].

Culicover and Wilkins (1984:115), following Nanni (1978), characterize well-formed tough-sentences as follows:

- (25) 1. The set of individuals referred to by the subject of the tough-class predicate must be assigned thematic roles by the verb of the complement clause (and thus must bind [e] in the complement).  
 2. The subject of the complement must be an Agent.  
 3. The Benefactee of the matrix clause must be identical to the Agent in the complement.

Examples (24a) and (24b) are bad because the complement subject is not an Agent. In (24c) the matrix Benefactee is not the Agent in the complement. A characterization of those predicates that are involved in the tough-construction requires the utilization of the event-theory thematic roles Agent and Benefactee.

In the time remaining, I briefly mention three additional adicity-changing grammatical processes that

involve event roles. These are exemplified in (26)-(28).

- (26)a. The girls ran.
- b. The girls outran the boys.
- c. The girls left.
- d. \*The girls outleft the boys.
- (27)a. John escaped from prison with dynamite.  
      (= John used dynamite to escape from  
      prison) (Bresnan 1982:165)
- b. John killed Bill with a knife. (= John  
      knifed Bill)
- (28)a. The night clerk {lost/found} him the  
      receipt book.
- b. My son (went and) bought a motorcycle on  
      me.

In each of the constructions exemplified here, an extra argument occurs with the verb. Out-prefixation requires an object that can be interpreted as Affected by the verb (notice that the same intransitives that permit resultatives permit out-prefixation). Instrumentalization (Bresnan 1982) as in (27) adds an Instrument argument to the verb's thematic domain.<sup>14</sup> The examples in (28) have an extra Benefactee.<sup>15</sup>

These three sets of examples are relevant to the main point here because in each case a thematic role from the event-related class is involved.

5. In this paper I have discussed how the semantic content of particular thematic roles affects grammatical operations. Thematic relations do therefore have a linguistic function.

I also distinguished between the perceptual roles and the event roles. Perceptual roles have played no part in the generalizations mentioned here.

I suggest that there is an important reason for this. It might well be that the perceptual roles, and the way they are paired with grammatical relations, serve to define particular verbs. If this were the case, then a rule which reassigned some perceptual role would have the effect of changing the basic verb meaning. While it is commonplace for linguists to talk about rules such as Causativization, that involve volitional Actors, or rules that "delete an Agent", I am unaware of a rule that, for example, adds a Theme or deletes a Source. To the extent that such rules are imaginable, they would seem to completely change the meaning of any verb that they would apply to.

Particular verbs, defined in part by the grammatical expression of their perceptual roles, can be appropriate in different types of events. Grammatical rules therefore can alter the expression of the event roles without completely distorting the underlying verb meaning.

#### Footnotes

1. The separation of thematic relations into (at least) two sets and the distinction between their defining and linguistic functions form basic premises of my joint work with Peter Culicover. Both assumptions have played an important role in our linguistic theory (e.g. Culicover and Wilkins 1986) and in our work on learnability (Culicover and Wilkins 1984, Chapter 5).

2. Perhaps Experiencer and Percept also belong in the set of event-theory roles. Jackendoff (1987) suggests that they belong on the "actional tier." However, it seems that they might co-occur with roles from both of the other sets, such as Location and Agent, and therefore might form a class of their own.

3. The equivalent of thematic structure would seem to be necessary in Lexical Functional Grammar as well, but I mention this parenthetically because of my own lack of familiarity with the theory.

4. That the subject be a Patient is not a sufficient condition on well-formed ergatives, it is merely a necessary one:

- i. \*The chicken killed.
- ii. \*The tree hit.
- iii. \*The soup ate.

5. Referring to examples such as those in (12), Keyser and Roeper say "We have no idea why these sentences are excluded. They refer to abstract mental activity, but we have been unable to capitalize on this property in any meaningful fashion." I suggest that it is not just "mental activity" that is relevant, but whether or not the transitive object is affected by the action denoted by the verb.

6. I realize that the distinction between Affected and Patient is not entirely clear. While difficult to distinguish the two by definition, it seems relatively straightforward to distinguish them by example and by the test for Patient. For instance, in i. Bill is Affected, whereas in ii. he is not.

- i. John gave Bill the book.
- ii. John gave the book to Bill.

In i. Bill is affected by the giving in that he has the

book. In ii. it might be the case that Bill did not in fact receive the book, and therefore was not affected by the giving. In neither case would Bill be a Patient, however:

- iii. \*What happened to Bill is that John gave him the book.

In a sentence like John read the book, the book is Affected. It is not a Patient, is not altered by some Agent or Instrument, and iv. is not good.

- iv. \*What happened to the book is that John read it.

(Compare: What happened to the book is that John burned it.)

7. Thanks to Ellen Kaisse (personal communication) for pointing out this example.

8. Keyser and Roeper claim that middle formation is "fully analogous" to passive formation and that "the mechanisms needed for middle formation follow straightforwardly from the existing grammar." In light of examples like (13) and (14) this statement would have to be reevaluated.

9. I am assuming, along with Carrier-Duncan and Randall, that the subject in middles is an object at the point Resultative Formation applies. Hence Aluminum cans squash flat easily is actually NP squash the aluminum cans flat easily where the NP would have to have an Agentive or Instrumental reading.

10. Carrier-Duncan and Randall state that the added object is assigned no thematic role by the matrix verb, that the resultative inherits the thematic structure of the base from which it is formed. It is true that the object is assigned no role from the perceptual set, but it must be interpretable as Affected.

11. There is another curious fact about the thematic structure of resultatives. Often with transitive bases the object cannot be one that would be assigned the canonical role. Notice:

- i. a. John sang the children to sleep.  
b. John sang himself hoarse.  
c. \*John sang the song long.
- ii. a. The mouse nibbled the cupboard bare.  
b. \*The mouse nibbled the food gone.
- iii. a. The customers bought the shelf empty.  
b. \*The man bought the books sold-out.

12. It might well be said that my observations about resultatives follow simply from what is entailed by a "result." This would be precisely right. Grammatical operations respect constraints imposed by

certain semantic roles, and these roles have a place in linguistic theory. This does not mean, however, that semantic criteria should invade the domain of syntactic operations. A syntactic rule of, say, Middle Formation could not be stated in terms of semantic primitives. The rules of semantic interpretation, however, would have to obey certain thematic conditions.

13. Examples (24a,b) are from Nanni (1978).

14. Bresnan demonstrates that these particular Instrument phrases are not simply optional prepositional adjuncts. For instance, they are disallowed where the verb already assigns an instrument role: An explosion killed Harry with dynamite is semantically anomalous.

15. Notice that a Benefactee is not necessarily "benefitted positively" by the action of the verb. A Benefactee is something more like an "interested party." In traditional grammars of Spanish this extra argument is sometimes called the "dative of interest;" in German it is called the "free dative."

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