7. Thematic Roles as Prototypes

The hypothesis put forth here about thematic roles is suggested by the reflection that we may have had a hard time pinning down the traditional role types because role types are simply not discrete categories at all, but rather are cluster concepts, like the prototypes of Rosch and her followers (Rosch and Mervis 1975). And when we accept that arguments may have different "degrees of membership" in a role type, we can see that we really need only two role types to describe argument selection efficiently, which I will dub *Proto-Agent* and *Proto-Patient* (and below, simply *P-Agent* and *P-Patient*).

As preliminary lists of entailments[1] that characterize these two role types (i.e. lists of possible verbal entailments about the argument in question), I offer (27) and (28), without implying that these lists are necessarily exhaustive or could not perhaps eventually be better partitioned in some other way:

(27) Contributing Properties for the ***Agent Proto-Role***:

a. volitional involvement in the event or state
b. sentience (and/or perception)
c. causing an event or change of state in another participant
d. movement (relative to the position of another participant)
(e. exists independently of the event named by the verb)

(28) Contributing Properties for the ***Patient Proto-Role:***

a. undergoes change of state
b. incremental theme
c. causally affected by another participant
d. stationary relative to movement of another participant
(e. does not exist independently of the event, or not at all)

These lists bear significant resemblance to lists in Keenan (1976) and Keenan (1984) respectively but are interpreted differently here: on this see §10. I put properties (27e) and (28e), which Keenan includes, in parentheses, because I am not sure to what extent they should be attributed to the discourse associations of

[1] It is important here to distinguish entailments of the *predicate* from what follows from any one sentence as a whole (e.g., entailments that may arise in part from NP meanings, etc.): for example, if *Mary slapped John* is true, and John is a normal human, then slapping being the kind of action it is, we would conclude that John necessarily perceives something (and we would do likewise from the majority of sentences using *slap*). But it does not follow that the direct object of *slap* is entailed to have the P-Agent property of sentience, since we can also felicitously say *Mary slapped the table* or *Mary slapped the corpse*. However, the object of *awaken* does have the P-Agent entailment of sentience, as is revealed by the anomaly of *#Mary awakened the table/ the corpse*.

subjecthood mentioned earlier, rather than proto-role definition. On whether (28d) should be omitted from the Patient properties, leaving only its counterpart (27d), see §9.3.3.) Each of these characteristics (a)-(e) is hypothesized to be semantically independent, although of course most English transitive verbs have more than one such entailment for each argument: *build*, for example has all of (27) for subject and all of (28) for object. But English predicates can be found that I think show each Proto-Agent entailment separately (for its subject argument), thus justifying my including each separately, and illustrating in "pure" form the kind of entailment that I intend the labels (a)-(e) above to designate. (All also follow the argument selection principles to be given below.):

(29) Examples Illustrating Independence of Proto-Agent Entailments (in Subject NPs)

a. *Volition alone:* John is being polite to Bill/ is ignoring Mary (cf. Dowty 1979)
What he did was not eat [anything] for two days. (Cruse 1973:18)

b. *Sentience/perception alone:* John knows/ believes/ is disappointed at the statement, sees/ fears Mary.

c. *Causation alone*: His loneliness causes his unhappiness. Teenage unemployment causes delinquency.

d. *Movement alone:* The rolling tumbleweed passed the rock. The bullet overtook the arrow. Water filled the boat. He accidentally fell.

e. *Independent Existence:* John needs a new car.

Volitional action is familiar, but (29a) reminds us that deliberately REFRAINING from action is volitional also. (On occasion, being polite can mean deliberately doing nothing, remaining silent.) Sentience (which possibly should or should not be classed separately from perception) is found alone, cf. (29b), with the classic propositional attitude verbs, the stative perception verbs, and the stative psych predicates (i.e. *fear, be surprised at*, etc.). Sentience means more than a presupposition that an argument is a sentient being; it is rather sentience with respect to the event or state denoted by the verb: the objects of verbs like *elect, appoint, nominate* and *idolize, venerate* and *convict, acquit, exculpate* are necessarily human but not entailed to know or perceive the relevant event. Causation is almost always accompanied by movement, but stative causatives and perhaps generic causatives (29c) would fill this slot. On the other hand, movement is found without causation or volition (29d), viz. with inanimates or accidental movement; note that with *overtake*, *pass*, the object argument can move also and only be "stationary" from the faster first object's perspective.

"Independent existence" (29e) means the referent is *de re* (unless further embedded) rather than *de dicto*, i.e. non-specific, and is not brought into being or destroyed by the event named by the verb but is presumed to exist before and after the event. Though there are some verbs that entail subject existence but have none of (a)-(d), there are apparently with no verbs having any of (a)-(d) without entailing existence (for their subject) as well.

Proto-Patient entailments are harder to isolate entirely, but the following sentences indicate their nature reasonably well; this time the relevant entailments are for the direct object argument:

(30) Examples illustrating Proto-Patient entailments independently (in Object NP)

a. *Change of State:* John made a mistake *(coming into being, therefore also (e) below)*. John moved the rock *(indefinite change of position)* John erased the error *(ceasing to exist)*

b. *Incremental Theme*: John crossed the driveway, filled the glass with water *(also stationary relative to other arguments*)

c. *Causally Affected:* Smoking causes cancer.

d. *Stationary relative to another participant:* The bullet entered the target, overtook the arrow.

e. *Existence not independent of event:* John built a house, erased an error *(Coming into and out of existence; not independent of (a))*. This situation constitutes a major dilemma for us. John needs a car, seeks a unicorn, lacks enough money to buy it (*de dicto objects: no existence*)

Under "change of state" (30a) I intend to include coming into existence, going out of existence, and both definite and indefinite change of state. (Some but not all arguments of this type are Incremental Themes). Incremental Theme was discussed in §6. The next three entailments, (30c(-(30e), are the converses of Proto-Agentive entailments (29c)-(29e): if a verb has one of the first type for one argument, it necessarily has the corresponding one of the second type for another. (One reason for still recognizing both kinds rather than trying to collapse them somehow is to distinguish the P-Agent and P-Patient from the third argument of a three-place verb, as we will see illustrated in §9.3.) Under (30d), existence not independent of the event, I mean to include (i) verbs of creating and destroying, where this "effected" argument referent either does not exist before or will not exist after the

event denoted by the verb, and (ii) de dicto non-specific NPs, where no *particular* entity of this description need ever be fixed at all.

Is movement also to count as a change of state? If so, it seems that the above lists permit it to count as both agent and patient properties. No matter how movement entailments are to be precisely classified ultimately (a point to which we will return in §9.3.3), two things can be said. (i) Movement is an agent property only when not caused by another participant in the event named by the verb (*the cloud passed the tree, water filled the tank)*, not when it is caused by something (*John threw the ball, The wall deflected the bullet*) or interrupted (*John caught the ball*): in this sense causation has priority over movement for distinguishing agents from patients. (ii) From considerations below (§9.3.3), it seems that movement usually only counts as a relevant change of state (i.e. a proto-patient property) when described as to or from a specified location (*put the book into the box*, *drive the hornets from the nest*).

Although we are using sets of entailments much like distinctive features to cross-classify arguments, I deliberately avoid saying "feature decomposition of roles" (as contrasted with Rozwadowska (1988), Zaenen (1988)), because I believe the boundaries of these kinds of entailments may never be entirely clearcut and I also would not rule out the desirability of "weighting" some entailments more than others for purposes of argument selection (as just mentioned with causation). Thus a cross-classification in terms of them will not be completely well-behaved in the way a true linguistic feature system will be. For example, the boundary of sentience is clouded by cases of computers or intelligent animals doing certain actions or in certain states that are stereotypically reserved for human, sentient participants, and such cases are reflected linguistically in *the machine switched itself off* (Cruse), *The dog believed you were a stranger, The program did that because it thinks you haven't saved the file first*, etc.; without delving into the philosophical questions these examples involve, I think it can be said that such language is not "wrong" or "metaphorical" for a certain kinds of sentient properties in limited situations but shows that sentience itself is something that different entities can have to different degrees. An unclear boundary of causation is the case of producing a change in a part of one's own body: in *I hurt my toe* there probably is causation, as this was an (unintended) result of some other act, but for *I raised my arm* (as compared with *I raised my glass*), the difficulties in calling this causation are well-known in the philosophical literature (what act did I do that caused my arm to rise?). The research of Talmy on "force dynamics" (Talmy 1985b) gives us further reason to worry about and maybe reanalyze the relationship of movement and causation beyond what is said in this paper.

The general point is that discrete feature decomposition has its proper place in describing syntax, morphology and phonology, because these domains are aspects of

the "coding system" of language at various levels and therefore in principle discrete. But semantic distinctions like these entailments, however, ultimately derive from distinctions in kinds of events found "out these" in the real world: they are natural (physical) classifications of events, and/or those classifications that are significant to human life. As such, there is no reason to believe all such classes must have discrete boundaries. Nor, I believe, is our cognitive ability to understand and recognize event classes limited to perceiving discrete types or those that cross-classify in some neat "grid" of semantic features or fields (which is not to say they NEVER classify this way). Much less are such classificatory schemes a preexisting universal mental mold which language forces us to categorize the world discretely and solely in terms of (pace some mentalistic linguists). If it turns out that our cognitive apparatus has evolved in such a way that something like an opposition between two Proto-Roles is a means of making a preliminary categorization of event participants for purposes of learning and organizing a grammar (a possibility explored in §11.-§13. below), then this does not affect the fact that the properties in (27) and (28) are significant because such categories of events are important to us in the first place and therefore to our cognition and our language secondarily, not vice-versa.

Furthermore, to the question once raised by Gennaro Chierchia (p.c.) whether in defining roles in terms of these entailments we would be replacing one unclear set of semantic primitives (the traditional thematic roles) by another just as unclear, I think the response is that these entailments are not any less clear, and more important, are more straightforwardly relevant to human life: while it is certainly not obvious that in ordinary reasoning and conversation people directly pay attention to or worry about whether something really was or was not a Theme or Source or Agent (in some sense of "Theme" etc. exactly as defined by Jackendoff or other linguist), but we certainly do concern ourselves all the time, both in everyday life and in courts of law, and sometimes to a painstaking degree, with whether an act was really volitional or not, with whether something really caused something or not, whether somebody was really aware of an event or state or not or had a certain emotional reaction to it, whether something was moving or stationary; and with whether something changed in a certain way or not, whether an event was finished or not, and whether an act produced something as a result or not.