

Thematic Proto-Roles and Argument Selection David Dowty (1991)

Thematic Proto-Roles (Proto-Agent & Proto-Patient) = cluster concepts, each characterized by a set of verbal entailments. An argument of a verb may bear either of the two proto-roles (or both) to varying degrees, according to the number of entailments of each kind the verb gives it.

Argument selection = principles determining which roles are associated with which grammatical relations.

Issues to account for:

- ↳ argument selection in alternative configurations (psych predicates and *spray/load*)
- ↳ role hierarchies
- ↳ acquisition
- ↳ are thematic role purely linguistic or cognitive?
- ↳ the unaccusative hypothesis (we shall come back to this later)

Problems with the theory of thematic roles:

- ➔ No formal semantic basis to the notion (even though thematic roles “are obviously creatures of the syntax-semantics interface”); barely ever discussed in formal semantics literature except the neo-Davidsonian representations (recall from Kratzer '96) and work by Chierchia and Carlson.
- ➔ Nobody has proposed a complete list of thematic roles; lots of disagreement on how many there are and which ones (do stative predicates assign Theme? Is Theme = Patient?); new thematic roles are proposed all the time (including Pereltsvaig 2001).

Two views of thematic roles:

➔ **Argument-indexing:**

- ◆ θ -roles serve two purposes:
 - distinguishing ‘real’ and dummy arguments (*it, there*)
 - helping to keep track of identity and distinctness of NPs during the course of a derivation (θ Criterion)
- ◆ thematic roles are discrete, non-overlapping; an NP “cannot be permitted to hover over two roles, or to ‘fall in the cracks’ between roles” (p. 549) \Leftrightarrow this is a very strong claim about natural language predicates and one to be empirically confirmed or disconfirmed
- ◆ Thematic role types vs. individual thematic roles (‘the hitter role’, ‘the kissor role’, ‘the builder role’ = Agent?); the former approach is too strong and the latter approach is too weak (doesn’t allow to talk about theta-role hierarchies)

➔ **Conceptual structure (Jackendoff):**

- ◆ θ -roles are defined by particular configurations of primitive operators (GO, STAY, CAUSE) in conceptual structure (Q: Does this conceptual structure correspond to syntactic structure? cf. Kratzer '96, Fodor '70, Bowers '93)
- ◆ θ -roles under this view do not obey the θ Criterion: some verbs assign more than one role to the same argument, others assign the same role to two different arguments, and some verbs ‘have’ thematic roles that they do not assign to any NP (e.g., *to butter* has a Theme but it’s expressed completely by the verb itself)

Dowty's goals (p. 551):

- 1) to lay methodological groundwork for studying thematic roles with the tools of model-theoretic semantics, and to propose some new strategies for attacking the area one step at a time
- 2) to propose one new account of thematic roles that seems to have merit as the first step
- 3) to make linguists recognize the dangers of continuing to take this notion for granted and of assuming that thematic roles are as well motivated as phonemes or phrase-markers
- 4) to point out what psycholinguistic implications the proposal could have and what questions it raises

The logical type of thematic roles: A set of entailments (to be distinguished from presuppositions) of a group of predicates with respect to one of the arguments of each. E.g., x *murders* y , x *nominates* y , x *interrogates* y :

- ◆ x does a volitional act (but not with x *kills* y)
- ◆ x intends this to be the kind of act named by the verb (but not with x *convinces* y)
- ◆ x causes some event to take place involving y (but not with x *looks at* y)
- ◆ x moves or changes externally (but not with x *understands* y)

Traditional problems in identifying thematic roles and using them to distinguish arguments:

1. Role fragmentation and unclear boundaries: if we adopt the finer categorization of roles to achieve certain distinctions, do we not thereby miss generalizations by not being able to refer to the grosser role types as well? Can adjuncts be assigned a thematic role? What about parallel meanings expressed by arguments and adjuncts (cf. (2a-b)). ***“The methodological dilemma here is that the possibility of empirical falsification is all but excluded.”*** (p. 555)

2. Cases where there may be no motivatable role that can distinguish two arguments:

- symmetrical stative predicates (X *is similar to/equal to/near/resembles/weights as much as* Y)
- conversely entailing predicates (X *is to the left of* Y & Y *is to the right of* X)
- commercial transaction predicates (X *sold* Y *to* Z & Z *bought* Y *from* X)

3. Pitfalls of misidentifying the motivation for a role: The generalization in terms of thematic roles is actually a syntactic, a semantic or a pragmatic generalization

- **a syntactic generalization:** English lexical passives are grammatical only when formed on Theme objects (*an unsold car* vs. **an un-sold customer*) ⇒ lexical passives can be formed from all and only the lexical monotransitive verbs in English; cf. (6)
- **a semantic generalization:** no derived nominal inherits the argument structure from its verb, hence the ungrammaticality of the *by*-phrase in derived nominals of the psychological verbs; cf. (7) ⇒ the *by*-phrases are incompatible with a stative interpretation
- **a pragmatic generalization:** the control of null subjects (PRO) is determined by thematic role of by a thematic role hierarchy; cf. (9) ⇒ extra-linguistic/pragmatic reasoning about who would have what object at his/her disposal at what point in the action determines the control; cf. (10), (11)

Are we trying to account for too much using thematic roles and in doing so dilute the notion beyond its usefulness?

E.g., accidental/temporal/stage-level properties vs. essential/permanent/individual-level properties:

- ↳ clause-final adjective adjuncts: *She caught a glimpse of the dancer nude* vs. *She caught a glimpse of the statue nude*
- ↳ complements of *with* and *without*: *They took the vote with the chairman* {*absent*/**arrogant*}.
- ↳ *sit/stand/lie* progressives: *The rowboat is lying on the river bank* vs. **New Orleans is lying at the mouth of the Mississippi River*.
- ↳ existentials: *There are firemen* {*available*/**altruistic*}.
- ↳ *ser/estar* alternation in Spanish.
- ↳ adjective position wrt to the noun: *the editors present* vs. *the present editors*

“The difficulty we have had in reaching agreement on just what a theory of thematic roles should look like is analogous to that of the blind men examining the elephant, each touching a different part of its body” (p. 561).

Solution: list entailments associated with potential thematic roles and see if there are non-arbitrary boundaries between them.

Event-dependent and perspective-dependent thematic roles: Agent, Patient, Experiencer, etc. vs. Figure & Ground; cf. (13). • Perspective-dependent “roles” ≠ thematic roles (instead, they are a matter of discourse)

Incremental Theme: The meaning of a telic predicate is a homomorphism from its structured Theme argument denotations into a structured domain of events. E.g., the progress of the event ‘mow the lawn’ can be ascertained by looking at the lawn itself. Activity-Accomplishment alternation: *drink a glass of beer* vs. *drink beer*. Some traditional Themes are Incremental Themes (20), while others are not (*push a cart, dim the lights*). Achievements have Themes which are not Incremental Themes (*win the race, find the key, recognize the face, remember the phone number*). Incremental Path Themes (*drive from New Haven to Boston, cross the desert*). Representation-Source Theme (*copy the article, memorize a poem*). Contra Tenny’s (1987, 1988) claim, Incremental Themes need not be direct objects (e.g., *She walked across the desert / The iceberg took several minutes to pierce the ship’s hull to this depth*; cf. (25)).

Thematic roles as prototypes: Proto-Agent and Proto-Theme

(27) Contributing properties for the Agent Proto-Role (illustrated in isolation in (29), pp. 572-573):

- 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 Theme Proto-Role (illustrated in isolation in (30), pp. 573-574):

- 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 named by the verb

Traditional thematic roles:

Agent = volition + causation (+ sentience + movement)

Experiencer = sentience without volition or causation

Instrument = causation + movement without volition or sentience

Theme = change (+ Incremental Theme + dependent existence + causally affected)

Argument Selection Principle: In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate; the argument having the greatest number of Proto-Patient entailments will be lexicalized as the direct object. SEE (31)-(34).

- Role Hierarchies (e.g., (36)) fall out of this principle.
- Thematic alternations fall out of the corollaries:
 - *buy / sell, borrow / lend, rent / rent*
 - psych predicates: *like / please, fear / frighten* (Croft's observation about stativity/inchoativity: the inchoative interpretation entails a Proto-Patient property in the Experiencer that is not present in the stative, namely undergoing a definite change of state, and this makes it into a direct object)
 - partially symmetric interactive predicates
 - *spray / load* alternation (49-50): Dowty's claim is that these are two different meanings recorded as independent items in the lexicon and not two different surface structures derived from the same deep structure.
 - lack of alternation with *fill & pour* (note that children make mistakes with these): the subject can only be the Incremental Theme when the verb is intransitive or expresses its other argument via a PP rather than a direct object.
 - alternations with *hit* but not with *break*; cf. (62-63): the latter but not the former entails a visible and permanent change of state