

11. Some Questions for Psycholinguistics

To the extent that the proposals made up to now have linguistic justification, they naturally suggest certain questions for psycholinguistics and the psychology of language. These will not be examined in depth here but only briefly noted for the sake of possible future study. Likewise, it should be well observed that these now transfer the level of discussion from the argument-selection problem alone to other domains for which the notion of thematic role has been invoked, so the cautions suggested in §1. should be kept in mind: though the possibility that a common notion of role-type applies across many domains is of interest, we should not rush to conclude this too quickly.

11.1 Argument Selection Principles

First, one might ask whether there is any psychological and/or practical reason why languages should have argument selection principles at all. One answer that has suggested itself to several people is that such lexical patterns must surely make the task of acquisition of a (first-language) grammar more straightforward: see Grimshaw (1981), Marantz (1982), Macnamara (1982), and Pinker, who has termed it (one of the forms of) "bootstrapping". This idea may be described as follows.

Consider the dilemma of the child acquiring her native language, at the stage at which she first begins to figure out how grammatical relations are marked in her language. In a sentence with a verb and two nouns, how will she determine how the syntax indicates which is the grammatical subject and which is the grammatical object? It could turn out that word order marks this, or else that not word order but case affixes in NPs indicate grammatical relations (and children do recognize case immediately as signaling subject and object in such cases: cf. Slobin (1982)), or possibly that agreement affixes on the verb are the only signals of grammatical relations (in which situation the categories of nouns relevant for agreement, as well as the verbal morphology, must be decoded). The child will have to determine her language's system by implicitly comparing a number of different sentences in order to discern patterns. Obviously, this task is more straightforward if there are independent clues to guessing, when presented with a sentence and the situation which the sentence is used to describe, which of the two nouns IS the grammatical subject and which is the object. If consistent argument selection principles exist that must hold for some important class of verbs, i.e. principles relating grammar to meaning, these are the clue that the child can exploit in learning the morphological and syntactic coding of grammatical relations. Then the child can go on to use grammatical cues, in turn, to correctly learn the lexicalization of other classes of verbs for which semantic cues are not reliable (hence, "bootstrapping"). This hypothesis assumes, of course, that the child can independently infer at least parts of the intended meaning of an utterance from

the context in which it is used, at least some of the time.

The present account of selection principles makes slightly different predictions from other versions of the "bootstrapping hypothesis." First, it naturally explains why thematic-role-related entailments (causal and Agent-like entailments vs. Theme/Patient entailments) are the relevant semantic categories for children to pay attention to for the initial step in order to learn the grammatical codings (as opposed to, say, Experiencer and Location), rather than leave us to merely stipulate them, as e.g. Pinker (1984:40) does. Likewise, by giving the clearest argument-selection status to "highly transitive" verbs (high number of P-Agent and P-patient entailments that are harmonic with the principles), it offers a natural account of why children might fix on THOSE verbs as clues to grammar but so not try to infer marking of grammatical relations from statives, psych predicates, or verbs like *receive* or *undergo* and thus become confused by the sometimes idiosyncratic lexicalization of the latter---even though some of these verbs DO have, N.B., some degree of agency or causation or change of state involved in their meanings. Finally, given the conclusion of § 8.5 about syntactically ergative languages, this version differs in entailing that the direction of correlation (P-Agent with subject, P-Patient is object) is not really universal but that the converse association is also permitted; thus the child is predicted to have the further task of learning (from independent grammatical facts, such as coordination) WHICH of the sets of coding features she is identifying actually mark subject and which mark object.¹

11.2 Why the Categories Proto-Agent and Proto-Patient?

At the most general level, one might ask whether there is any reason why the particular selection of entailments involved in the proto-roles (intention, causation, change-of-state, etc.) should appear rather than other entailments (e.g. is a round object, etc.). But I assume there are fairly obvious answers to this question both in the world as well as in what is known about human cognition: distinguishing these properties is on the one hand an ability with obvious advantages to human survival and on the other, a well-studied cognitive ability that emerges at an early age (cf. e.g. Leslie and Keeble (1987) on the ability of infants to perceive causation as early as 27 weeks). I do not see anything that separates the present proposal from many

¹It is also interesting to compare this hypothesis with a procedure actually recommended in a recent textbook for linguists in the field as they begin to analyze the grammatical system of an unknown language (Andrews 1985, 68-69). Andrews recommends that the linguist first try to elicit from the native informant a representative set of what he calls "primary transitive sentences", sentences with transitive verbs that have clear instances of Agents and Patients. From this list, the linguist should be able to discover how the grammar distinguishes subjects from objects generally (and whether the language is accusative or ergative). Only then is the linguist advised to go on to verbs such as psychological predicates, which can be examined, using the grammatical criteria already established, to see which arguments the language treats as subjects and objects in these less predictable cases.

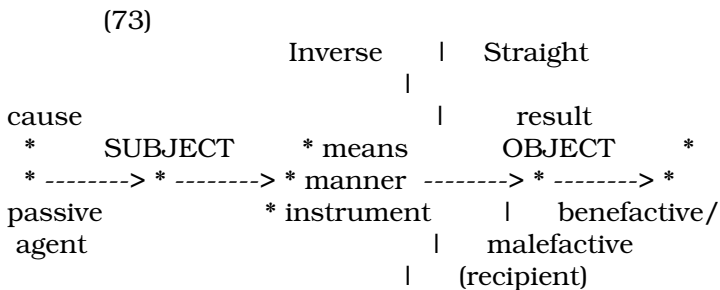
others at this level of generality.

What is more distinctive about the present view is the grouping of these entailments not into disjoint role types (Agent, Experiencer, Theme) but into two and only two super-groups of entailments. Natural questions to ask here are: (1) whether the child does not distinguish at all at the time of early language acquisition between, say, intention and movement and causation, or between causal affectedness and uncaused change of state, or (ii) though the child may be cognitively capable of distinguishing between these various individual categories (causation, volition, etc.), whether on at least on some occasions they are grouped together as a significant cognitive supercategory for the child (and similarly for Proto-Patient), and when faced with the difficult task of learning the first language, it is easier to first single out the supercategories linguistically than the finer ones. It does seem that in the environment of the very young human such categories coincide empirically in the majority of cases: most of the events that are described linguistically to a young child probably have a human "agent" that is a causal force AND a sentient and volitional participant AND an entity that moves (and a preexisting entity) simultaneously, and similarly for Proto-Patient categories.

Though I believe such cognitive hypotheses are ones that only cognitive science and psychology, not linguistics by itself, can adequately evaluate, I mention here two independent motivations I know for semantic "supercategories" very similar to those proposed here. One is a language acquisition study by Clark and Carpenter (1989) bringing evidence that "Children have a category of source that encompasses not only locations but also agents, causes, possessors, standards of comparison, and prior events" (p. 2). That is, their generalized "Source" category is evidently not exactly the "Proto-Agent" category I have discussed here but a supercategory of it. But note that the linguistic cases they treat which make it such are precisely those I have NOT discussed here, namely, cases where this generalized Source appears in some other grammatical form besides normal subject--- usually, as object of preposition *from*, as in the child's utterance *I took my temperature from the doctor*, meaning roughly that I had my temperature taken by the doctor). Their observed generalizations show that there is a common cognitive category here, even when expressed in DIFFERENT grammatical forms (subject and obliques). Clark and Carpenter introduce the term *emergent category* for categories similar to 'covert categories' but that "reflect the conceptual similarities perceived by children among paradigms of structures, even where these similarities are obscured by the conventional categories," (generalized) Source being one such category. Though the (traditional) Source does NOT move, as many Proto-Agents do, note that there is a conceptual connection between Agent and Source: in some prototypical causation events such as throwing something or handing an object to someone, the Agent, though it causes the event and makes a small local movement, stays behind while the object, the "Theme", moves away from it; in Clark and Carpenter's terms (p. 21)

the Agent is seen as the "starting point" for the action. In a non-causal event likewise, the Theme also moves away from the Source (its original location) while this Source remains stationary. (The question of how many and which cognitive super-categories of Proto-Agent and Proto-Patient might exist of course goes well beyond the scope of this paper.)

A different kind of evidence for proto-roles, which is like the foregoing in involving obliques rather than subject and object selection, comes from Croft's (1986b) cross-linguistic study of which syncretisms in cases (i.e. morphologically represented cases or adpositions, not "abstract case") representing the same thematic role are found natural languages and which are not. According to Croft, the best theory of this syncretism distribution is based on an analysis of events into "causal chains" whose organization is indicated by the chart in (73) (Croft 1986b:177):



Here, points marked with asterisks represent event participants having certain thematic roles, "SUBJECT" and "OBJECT" label the participants named by these two grammatically-identified positions (presumably, Croft assumes these are more or less typical Agent and Patient respectively), and the rightward-pointing arrows indicate the chain of causal relationships that Croft believes to hold among participants in a complex event. (Whether it is really correct to call all of these CAUSAL relationships and if so whether the ordering of them should be exactly as Croft diagrams it is actually not crucial to our concern here: the relevance to the proto-roles hypothesis is that roles to the left of the vertical line have proto-agent entailments, those to the right have proto-patient entailments.) Croft's observation is that case "syncretisms" within a language (the same morphological case or adposition used to indicate two different thematic role-types, e.g. as English *by* indicates passive agent as well as manner and instrument) clearly tend to occur within the set of "straight" oblique roles (those causally "downstream" from the direct object argument) or within the set of "inverse" oblique roles (those causally "upstream" from the object argument), but not ACROSS these two sets: in a typologically-balanced sample of 40 languages, he finds 39 instances of syncretisms among straight roles, 30 syncretisms among inverses, but only 5 cases of "non-directionality" (languages with such an impoverished case system to make the straight/inverse distinction meaningless) and only 2 outright exceptions.

By appealing to a familiar metaphorical association between movement and causation, what Croft (1986b:188) calls the OBJECT-LOCATION metaphor (in which the moving object continues to serve as the grammatical object as above, the point of origin is viewed as having a causal relation to it---cf. remarks on Clark and Carpenter' SOURCE above---and the point of destination as having a caused relationship), the allative (or Goal) oblique role may added to the set of straight roles and the ablative (or Source) role is added to the inverses. Examining syncretisms of one of these locative/directional roles with the causally-identified oblique roles in the above table, Croft finds an additional 13 syncretisms among inverse roles, 15 syncretisms among straight roles, but only 3 or 4 syncretisms across this division.² Croft's hypothesis about the role of causal change has many interesting implications which go far beyond the scope of this paper (it could be viewed as offering at least a partial explanation of what proto-role properties have in common), but its primary relevance is simply that it provides data from a domain quite different from acquisition for a non-discrete classification of role-types centering around two super-categories, but data that involves oblique arguments, and encompasses the role-types Source and Goal, as well as Subject and Object selection.

One interesting side observation to be made here is that the traditional roles Source and Goal make their appearance in Clark and Carpenter's and in Croft's studies, but neither these two roles nor sets of proto-entailments corresponding to them were found to be needed to describe subject and object selection. This might (or of course might not) turn out to be an illustration of my earlier suggestion that different notions of "thematic role" may emerge depending on which domain of questions ones tries to answer. (There is perhaps a natural taxonomic prejudice in the linguist to suspect that at the finest-grained level of analysis, underneath all this semantic variation, there is some universal Lockean semantic vocabulary into which all attested "thematic-role-related" generalizations can all eventually be decomposed. But is it time to give this idea up and look for universal principles instead in, say, the general PROCESS by which "big" semantic categories are linguistically (and cognitively) divided up into progressively finer ones as grammar and cognition develop, rather than for limits on the finest cognitive-linguistic categories that can supposedly result? What if, after all, there are no such ultimate limits?)

11.3 Proto-Roles as Defaults in the Acquisition of Lexical Meaning

² Croft takes the position that this OBJECT-LOCATION metaphor is only one of several relevant but linguistically distinct associations that can be found between causation and change of position (and therefore that causal and spatial relations cannot be equated, as some theories have attempted to do). See Croft (1988:120-264) for discussion of these and several other varieties of typological syncretism generalizations.

By far the most interesting psycholinguistic suggestion posed by the proto-role hypothesis is, I believe, the possibility (already alluded to at several points) that proto-roles could serve the language learner as defaults for details of meanings of individual verbs where the learning context does not actually provide enough information to determine these details. This was suggested for the subject-volitionality entailments characteristic of intransitive vs. transitive collectives like *kiss* (cf. (42)-(44), the subject-motion entailment for two forms of *collide* (cf. (45), (46)), the object-change-of-state entailment in Experiencer-object *please* vs. stative *like* (cf. (47)-(48)), the difference in incremental theme entailments of *load the truck with the hay* vs. *load the hay onto the truck* and other ditransitive patterns (cf. § 9.3.1).

On the one hand, these patterns looked too widespread and systematic to be the result of chance. But on the other hand, there were individual lexical exceptions to most every pattern (lack of either movement or volition in intransitive *be similar*, symmetric volition in *debate*, lack of incremental theme entailment alternation for the syntactic alternation with *hit*, contrasting with that in *spray* and *load*, the different pattern in change entailment for the alternation for *break*, lack of syntactic object alternation altogether in *fill*, *cover*, etc.), so the patterns cannot be attributable to compositional semantic rules associated with the constructions or to general constraints across all lexical meanings of a certain type. Most of these "exceptions" of course turned out to look quite sensible when one considered the nature of the types of events in the real-world that are important to humans (the necessarily symmetric versus possibly asymmetric volitionality in debating versus kissing, for instance.) Pending some other explanation of these apparently significant but partial semantic regularities, the fact that the semantic distinctions involved here all turn out to be among those we have postulated as defining ones for proto-roles motivates the hypothesis that learners may pick up such details of verb meaning by "semantic default", i.e. by taking it for granted that the subject and object arguments have the full complement of possible proto-role entailments appropriate to each of these grammatical relations, whenever the learning environment in which this word is encountered does not contradict this explicitly.