

Evidence for the Early Use of Telicity in Comprehension

This talk presents evidence that VP-internal situation-aspect information (Smith, 1991), specifically telicity, is accessible during language comprehension (as opposed to viewpoint aspect information, see Schmitt et al, 2003). Since the proposal of the UAH (Perlmutter & Postal, 1984) and UTAH (Baker, 1988), a tight connection has been recognized between verbal semantics and the positions in which arguments are projected. Over the past decade, however, a new approach to the relationship between semantics and argument projection has been proposed: that argument structure is determined primarily by event structure. This suggests a reduction of the role of lexical specification of argument structure (Tenny, 1992; Borer, 1996; Ritter and Rosen, 1998; among others). One natural question that arises is whether event structure or argument structure information (or both) is used by the parser during comprehension.

Working within the argument-structure theory, MacDonald (1994) found that reduced relative clause sentences with obligatorily transitive verbs (such as (1)a) resulted in less reading time garden-pathing than potentially intransitive verbs (such as (1)b), suggesting that argument structure is accessed on-line: if a relative clause verb is recognized as transitive, it will lead to less garden pathing. (This analysis is extended to other studies in Townsend and Bever, 2001).

- (1) a. *The ruthless dictator who was captured by the guard was very unpopular.*
 b. *The ruthless dictator who was fought by the guard was very unpopular.*

O'Bryan et al. (2002, 2003) reanalyzed results of three self-paced reading studies on reduced relative sentences by recategorizing the verbs according to their telicity and transitivity, dividing the verbs into four categories: (i) potentially intransitive atelic; (ii) potentially intransitive telic; (iii) obligatorily transitive atelic; (iv) obligatorily transitive telic. The transitivity categorization was based on the results of a questionnaire in which eight subjects rated the naturalness of each verb in transitive and intransitive sentence frames. The telicity categorization was based on the application of two well-known syntactic tests: a) the occurrence of the verb with *for an hour* versus *in an hour* adverbials, b) the homogeneity of the event described by the verb (Kenny's 1963 tests). The results of the reanalysis showed that a significantly larger degree of garden-pathing occurs in reduced relatives with atelic verbs, and that this effect was independent of transitivity since (i) atelic obligatorily transitive verbs were associated with more garden-pathing than telic potentially intransitive verbs, and (ii) when transitivity was held constant, there was still a significant telicity effect. The effect occurs very early, i.e., on the region including the initial verb and the word *by* that follows it (the studies all presented two words at a time).

To directly test these findings, we conducted a comprehension experiment on reduced relative clause sentences, in which we balanced the number of verbs in the four categories mentioned above using the same tests. Example sentences are given in (2)a-d.

- (2) a. *The actress sketched by the writer left in a hurry.* (p-intrans, atelic)
 b. *The actress awakened by the writer left in a hurry.* (p-intrans, telic)
 c. *The actress described by the writer left in a hurry.* (oblig-trans, atelic)
 d. *The actress spotted by the writer left in a hurry.* (oblig-trans, telic)

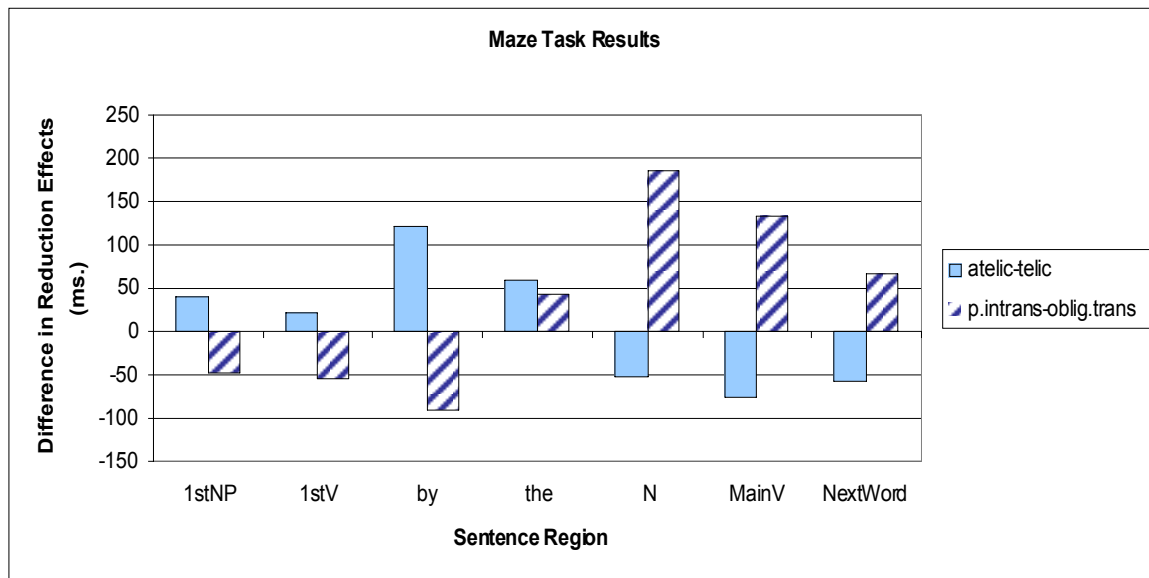
We adopted the Word Maze paradigm (Freedman & Forster, 1985) because it provides online reading times at each word without the problem of spillover found in self-paced reading studies. In the Word Maze paradigm, the subject is presented with a word followed by a screen containing a pair of words, of which the subject chooses one as a continuation. Then another pair of words appears. At each step, only one of the two words forms a grammatical continuation of the sentence, and the subject's task is to pick that word. The task yields a reaction time for integrating each word into the sentence.

The results show a significant effect of telicity on the *by* region and the following *the* region: telic verbs elicited less garden-pathing. Transitivity had a significant effect only on later regions: obligatorily transitive verbs elicited less garden-pathing than potentially intransitives, (see Figure 1). The *by*-phrase triggers reanalysis because it forces a passive interpretation.

We chose to use a *by*-phrase as opposed to a different kind of prepositional phrase because it triggers immediate reanalysis of the first verb. At the point where reanalysis occurs, the crucial question is whether event structure or argument structure features of the embedded verb are available to play a role in the garden path's reanalysis. Our results show that on the *by* region, telicity is available to facilitate the reanalysis while transitivity is not. In contrast with the *by*-phrase, which triggers a reanalysis, other prepositions allow the mis-analysis of the garden path to continue (until the main verb, as in the classic case: *the horse raced past the barn fell*). In such cases, the reanalysis is much further downstream from the embedded verb; thus, telicity could only have a visible effect later. This may be confirmed by recent data (see Townsend et al, personal communication 2002; O'Bryan et al, in preparation).

The effectiveness of *by*-phrases in eliciting sensitivity to telicity, and not to transitivity, suggests that event structure is *not* parasitic on argument structure, and that the reverse is true.

Figure 1. Reduction facilitation effect of Telicity and Transitivity by word in maze task



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