Cognitive Science 30 (2006) 181–192

Deferred Interpretations: Why Starting Dickens Is Taxing but Reading Dickens Isn't

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Received 22 March 2004; received in revised form 8 July 2005; accepted 15 July 2005

Abstract

Comprehenders often need to go beyond conventional word senses to obtain an appropriate interpretation of an expression. We report an experiment examining the processing of standard metonymies (*The gentleman read Dickens*) and logical metonymies (*The gentleman began Dickens*), contrasting both to the processing of control expressions with a conventional interpretation (*The gentleman met Dickens*). Eye movement measures during reading indicated that standard (producer-for-product) metonymies were not more costly to interpret than conventional expressions, but logical metonymies were more costly to interpret than both standard metonymies and conventional expressions. These results indicate that constructing alternative senses is sometimes taxing and that not all types of deferred interpretations are processed in the same way. The results suggest that a critical factor in determining the attendant cost of constructing alternative senses is whether compositional operations must generate unexpressed semantic structure to realize an extended sense of an expression.

Keywords: Coercion; Metonym; Logical metonymy; Semantics; Sentence processing

1. Introduction

There are situations in which comprehenders must go beyond conventional word senses to obtain the appropriate interpretation of an expression. Particularly common cases involve what Nunberg (2004) termed *deferred interpretation,* where an expression is "used to refer to something that isn't explicitly included in the conventional denotation of that expression" (p. 344).[1] This class includes standard metonymies such as Example 1, where the referring expression *Dickens* is naturally taken to refer to the writings of Dickens:

1. The gentleman read Dickens.

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It also includes *logical metonymies* (Lascarides & Copestake, 1998; Nunberg, 1995; Pustejovsky, 1995; Verspoor, 1997) such as (2), where the "logical" requirements of the verb force a nonconventional interpretation of its complement:

2. The gentleman began Dickens.

The most common interpretation of Example 2 is that the gentleman began to read Dickens's writings. Hence, like Example 1, it also involves a type of deferred interpretation because *Dickens* refers to the event of reading Dickens's writings rather than to the person.

The question we address here is whether comprehenders perform the same basic operations in interpreting these types of expressions. Nunberg (2004) suggested that cases of deferred interpretation exploit a common linguistic mechanism of *transfer of meaning.* This claim invites the inference that comprehenders should use essentially the same type of operations to interpret Examples 1 and 2.

We report an experiment that examines the reading of expressions such as Examples 1 and 2, contrasting each to the reading of expressions with conventional interpretations such as Example 3, where *Dickens* refers to the writer:

3. The gentleman spotted Dickens.

Our results indicate that Example 1 is *not* more costly to interpret than Example 3 but that Example 2 is more costly to interpret than both Examples 1 and 3. On this basis, we argue that deferred interpretation per se is not taxing for the language comprehension system. However, it can be costly if comprehenders are required to engage in more extensive compositional operations—what has been termed *enriched composition* (Jackendoff, 1997; Pustejovsky, 1995)—to establish the deferred sense of an expression. We argue that a critical factor in determining the attendant cost of constructing alternative senses is whether compositional operations must generate unexpressed semantic structure to realize an extended sense of an expression.

1.1. Reading Dickens

How to formally define metonymic relations of the sort in Example 1 is a matter of some debate, and the linguistic mechanisms that underlie deferred interpretation are not fully understood. Nonetheless, one generalization appears to be that metonymic extensions exploit salient correspondences between two things (e.g., Nunberg, 1995) and that they must fulfill a criterion of "noteworthiness" in that the derived property is a noteworthy feature of the bearer (e.g., Dickens's writings are clearly a noteworthy product of Dickens *qua* writer, hence the meaning transfer is licensed; see Nunberg, 2004, for a discussion of this criterion).

However, despite the fact that readers must establish some sort of correspondence to derive a metonymic interpretation, research in language comprehension has suggested that readers can adopt metonymic interpretations as quickly as conventional interpretations. For example, Frisson and Pickering (1999) measured eye movements during the reading of sentences with Place-for-Event (e.g., *protested during Vietnam*) and Place-for-Institution (e.g., *talked to the school*) metonyms, comparing each to control sentences with conventional interpretations (e.g., *traveled around Vietnam* and *walked to the school*). Readers experienced difficulty when the metonym was unfamiliar (e.g., *protested during Finland*), but familiar metonyms (e.g.,

protested during Vietnam) were as easy to process as conventional interpretations. These results are compatible with the finding that familiar metaphors also appear to be easy to process (e.g., Glucksberg, 2001; McElree & Nordlie, 1999).

One might suppose that familiar metonymic senses—for example, *Vietnam* interpreted as an event—become entrenched over time, and that readers do not incur substantial costs in processing familiar metonyms because they can simply select an alternative lexicalized sense (e.g., the event rather than place sense of *Vietnam* or the product rather than person sense of *Dickens*). However, Pickering and Frisson (2001) found that unfamiliar metonyms (e.g., *read Needham*) were easy to process if the context provided information to support a metonymic extension (e.g., that Needham was a writer). This suggests that readers can rapidly construct novel metonymic interpretations if they are licensed by the context and mediated by a common metonymic convention (e.g., Producer-for-Product). Together, results from the processing of familiar metonyms and novel metonyms in a licensing context suggest that this form of deferred interpretation is straightforward.

1.2. Starting Dickens

If all types of deferred interpretation involve a common linguistic mechanism, we would expect that other cases of deferred interpretation would be likewise processed without substantial cost. For example, logical metonymies such as Example 4 should not be costly to interpret.

4. The author began the book

This sentence involves deferred interpretation because the complement of the verb, *the book,* does not have a conventional interpretation in which it simply denotes a written document or something similar. Rather, comprehenders report interpreting the complement as denoting an *event* involving the book, typically "writing the book" or "reading the book" (Lapata, Keller, & Scheepers, 2003; McElree, Traxler, Pickering, Seely, & Jackendoff, 2001; Traxler, Pickering, & McElree, 2002). In Example 4, this interpretation is triggered by the verb *begin,* which logically requires a complement expressing an event. The semantic mismatch between the verb and its complement forces readers to "coerce" *the book* into the required semantic type by interpreting it as part of an unstated eventive complement. This results in an interpretation in which *the book* is interpreted as an event involving the book. This type of coercion operation appears necessary whenever eventive verbs, such as *begin, continue, finish, enjoy,* and so forth, are paired with complements that do not conventionally denote events, which occurs frequently in text (e.g., in the Brown corpus, 21% of the noun phrase [NP] complements for the verb *begin* can be clearly classified as denoting non-events).[2]

Despite their apparent similarity to metonyms such as *Vietnam* in *protested during Vietnam,* where a place is interpreted as an event, online comprehension studies indicate that readers are slower to process sentences with logical metonyms than control sentences with conventional interpretations. For instance, one set of contrasts compared expressions such as Example 5 to controls such as Example 6:

5. The carpenter began the table during the morning break.

6. The carpenter built the table during the morning break.

The control sentences used verbs that directly expressed the event that readers report is implicitly conveyed in the corresponding logical metonymies. In both self-paced reading (McElree et al., 2001) and eye-tracking studies (Traxler et al., 2002), readers were slower to process the NP *the table* or the following two words in Example 5 than in Example 6, even though the sentences were rated equally plausible and matched on other relevant dimensions.

The locus of this effect appears to lie in the compositional operations involved in interpreting the verb phrase (VP), specifically the operations needed to combine an eventive verb with an entity NP in cases such as Example 5. Crucially, the cost does not reflect the fact that any complement of an eventive verb is taxing to interpret. In both self-paced and eye-tracking studies, Traxler et al. (2002) found that readers were not slower to interpret expressions such as *The boy started the fight,* where *the fight* already denotes an event. This pattern also suggests that the cost is not due to aspectual differences between verbs such as *started* and *read,* a point that is further reinforced by the finding that readers interpreted the NP *the table* faster in *the carpenter began building the table* than in *the carpenter began the table* (Pickering, McElree, & Traxler, 2005).

One might assume that the cost in interpreting logical metonyms reflects the effort involved in retrieving an appropriate activity for the metonymic interpretation rather than the complexity of the compositional operations. However, this claim is inconsistent with findings that the cost remains even when the immediate context provides the action implicit in the metonymic interpretation (e.g., *The carpenter was building all morning. Before he began the table …* ; Traxler, McElree, Williams, & Pickering, 2005). This finding also speaks against attributing the cost to the inherent underspecification of these expressions. As contextual information tends to provide a very rapid constraint on interpretation, placing the activity in the immediate context should have eliminated the cost if ambiguity had been the source of the effect (Traxler et al., 2005).

1.3. Contrasting standard and logical metonymy

This review suggests that logical metonymies (e.g., *began the book*) tax the processing system in ways that standard metonymies (e.g., *protesting during Vietnam*) do not. This suggests that these forms of deferred interpretation involve different processing operations. However, the comparison is questionable because the experiments employed different participants and very different types of materials. For example, the studies of standard metonymy used names such as *Vietnam,* whereas studies of logical metonymy have typically used definite NPs such as *the book.* This not only introduces differences in the experimental contrasts, but in the respective control conditions as well.

We report an experiment that employed eye-tracking to examine the processing of minimally contrastive triplets such as Examples 7 to 9:

7. The gentleman spotted Dickens while waiting for a friend to arrive. (conventional form)

8. The gentleman read Dickens while waiting for a friend to arrive. (standard metonym)

9. The gentleman started Dickens while waiting for a friend to arrive. (logical metonym)

In Example 7, the proper name *Dickens* is preceded by a verb that induces readers to interpret the name conventionally, as referring to the person. In contrast, the verb *read* in Example 8 induces readers to interpret *Dickens* as referring to his writings, using a standard Producer-for-Product metonymy. Finally, the verb *started* in Example 9 induces readers to interpret *Dickens* as referring to an event. Given that *Dickens* is a known writer, the most plausible event interpretation is one that could be paraphrased as *reading the works of Dickens.*

At issue was the relative cost associated with interpreting the proper name across the three conditions. If all deferred interpretations involve the same interpretive operations, then the processing costs for *started Dickens* in Example 9 should be comparable to those found in … *read Dickens* in Example 8. If deferred interpretation is straightforward, then neither *read Dickens* nor *started Dickens* should be more costly to interpret than … *met Dickens.* In contrast, if interpreting logical metonymies involves distinct or additional operations, then a cost might be evident in Example 9 that is not present in Example 8.

2. Experiment

2.1. Method

2.1.1. Participants

Thirty native British English-speaking students from the University of Edinburgh participated in the experiment for money. All had normal or corrected-to-normal vision.

2.1.2. Items

We constructed 24 item triplets such as Examples 7 to 9, in which only the verb preceding the name varied across conditions (see Appendix). All 24 sentences contained the name of a famous writer. We assessed the frequency of occurrence of the conventional and metonymic interpretations of the names by extracting the first 20 classifiable examples of the name from the 100-million-word British National Corpus and, if this search did not provide enough classifiable examples, augmented it with an Internet search. The names were used in the conventional sense 82.9% of the time (range: 65–100%), so there was a strong bias for the conventional interpretation.

We attempted to control the length and frequency of the verb in the three conditions. However, given the limited number of plausible verbs, the verbs in the logical metonym condition were slightly shorter and more frequent than the verbs in the other two conditions. The average length in characters was 8.0, 7.8, and 7.7 for conventional forms, standard metonyms, and logical metonyms, $F(2, 71) < 1$. The average log frequency using the CELEX database (Baayen, Piepenbrock, & Van Rijn, 1993) was 2.3, 2.4, and 3.1 respectively, $F(2, 71) = 5.64$, $p < .01$. Paired sample t tests showed that the frequency of the verbs for the logical metonymy condition was significantly higher than the other two conditions (ps $< .05$), which themselves did not differ from each other ($t < 1$). Note that if this frequency imbalance affects processing of the next word, then we expect that Dickens in the logical metonymy construction would be read faster. We also asked 30 more participants to rate on a 5-point scale the sentences for plausibility (5 = *highly plausible*), with each participant judging one version of each triplet. Plausibility

was high for all three conditions (4.4 for conventional forms, 4.6 for standard metonyms, and 4.4 for logical metonyms) and did not differ, $F(2, 71) = 1.82$, $p = .17$.

We assigned the sentences to three lists, with eight instances of each condition per list, and one version of each item in each list. Some verbs appeared twice in a list, but care was taken that the repeated verbs were far apart in the list and that the same number of verbs was repeated in each condition (names were not repeated across lists). The sentences were presented in a pseudorandom order (fixed across subjects) along with 76 filler sentences, 24 of which mentioned famous people other than writers (e.g., *David Beckham, Sean Connery, George Bush*). Because all these sentences employed the name in the conventional sense, overall two thirds of the sentences with a famous name expressed a conventional interpretation, one in six a standard metonymic interpretation, and one in six a logical metonymic interpretation.

2.1.3. Procedure

Eye movements were recorded from individual participants using a Fourward Technologies Dual Purkinje Generation 6.3 Eyetracker (Buena Vista, Virginia), which has an angular resolution of 10 min arc. Viewing was binocular, but only the movements of the right eye were recorded. Stimuli were displayed on a VGA color monitor 77 cm from the participants' eyes. Head movements were minimized using a bite bar and forehead rests. The eye-tracker recorded participants' gaze position every millisecond.

Participants were instructed to read the sentences carefully for understanding while maintaining a normal reading speed. The eye-tracker was calibrated at the start of the experiment. The calibration was checked between sentences, and if necessary, the participant was recalibrated. After reading a sentence (rereading was allowed), participants pressed a button to make the sentence disappear. On 50% of the trials (balanced across conditions), a comprehension question appeared, half requiring a yes response, half a no response. Accuracy was 91.1%.

2.1.4. Analyses

We pooled short contiguous fixations, such that fixations shorter than 80 msec and within one character of another fixation were incorporated into one larger fixation, under the assumption that they were a single fixation in which the eye moved a small amount. Fixations of less than 80 msec and not within one character space of another fixation were deleted as, presumably, readers hardly extract any information during these short fixations.

We report analyses on three regions: the verb, the name itself, and a spillover region (defined as the next word after the name). The following measures are discussed: *first-pass time* (the sum of fixations on a word before fixating a word to the left or the right), *first-pass regressions* (the percentage of regressions backward from a region before crossing the region boundary to the right), and *total time* (the sum of all fixations in a region). The minimum and maximum reading times were set at 80 and 1,500 msec for the first-pass duration measure,[3] and 80 and 2,500 msec for total-time duration. For each measure and for each of the three critical regions, we subjected the data to separate one-way analyses of variance, with condition (conventional form vs. standard metonym vs. logical metonym) as a within-subjects and items factor, treating subjects (F_1) and items (F_2) as random effects. We also report the more conservative Min$F$ statistic (Clark, 1973).

2.2. Results

Table 1 presents the participant means for the three eye-tracking measures. Trials with major track losses, when the region before the verb was not fixated, or when two consecutive regions were skipped, were excluded from the analyses (total of 2.5%). We discuss each measure separately to give a better view of how the effects emerged over time.

No reliable effects were found on first-pass time in the verb and name regions. There was a slight tendency for the verb in the standard metonym condition to be fixated longer than the verb in the other conditions, but this difference was not significant, $F_1(2, 58) = 2.45$, $p = .10$; $F_2(2, 46) = 1.18$, $p > .30$; $\min F'(2, 85) < 1$. Fixations in the spillover region were slightly longer for the logical metonym condition than for the other conditions, producing weak evidence for a main effect, $F_1(2, 58) = 2.91$, $p = .06$; $F_2(2, 40)^4 = 2.58$, $p = .09$; $\min F'(2, 92) = 1.37$, $p = .26$; but pairwise comparisons were generally not significant: conventional form versus standard metonym, $M_{diff} = 4$ msec, confidence interval $(CI)_{95\%} = \pm 15$, ts < 1; conventional form versus logical metonym, $M_{diff} = 17$ msec, $CI_{95\%} = \pm 15$, $t(29) = 1.82$, $p < .08$; $t(21) = 2.06$, $p = .05$; $\min F'(1, 50) = 1.86$, $p < .18$; standard metonym versus logical metonym, $M_{diff} = 21$ msec, $CI_{95\%} = \pm 17$, $t(29) = 2.28$, $p = .03$; $t(21) = 1.89$, $p = .07$; $\min F'(1, 47) = 2.12$, $p = .15$.

First-pass regressions showed a significant effect on the name region, $F_1(2, 58) = 4.87$, $p < .02$; $F_2(2, 46) = 5.74$, $p < .01$; $\min F'(2, 104) = 2.63$, $p < .08$, with nearly twice as many regressions occurring when the name appeared in the logical metonym condition: conventional form versus standard metonym, $M_{diff} = 0.6\%$, $CI_{95\%} = \pm 4.9$, ts < 1; conventional form versus logical metonym, $M_{diff} = 9.5\%$, $CI_{95\%} = \pm 6.4$, $t(29) = 2.61$, $p = .01$; $t(23) = 2.76$, $p = .01$; $\min F'(1, 52) = 3.60$, $p = .06$; standard metonym versus logical metonym, $M_{diff} = 10.1\%$, $CI_{95\%} = \pm 6.7$, $t(29) = 2.79$, $p < .01$; $t(23) = 3.08$, $p = .005$; $\min F'(1, 52) = 4.28$, $p = .04$. The spillover region showed the same general pattern, but failed to reach significance, $F_1(2, 58) = 2.43$, $p = .10$; $F_2(2, 46) < 1$; $\min F'(2, 81) < 1$.

Table 1
Mean Reading Time Durations and Percentage of Regressions

Measure	Verb	Name	Spillover (Next Word)
First-pass time			
Conventional form	338 (11.1)	411 (15.7)	262 (9.8)
Standard metonym	354 (12.6)	392 (15.7)	258 (10.9)
Logical metonym	330 (11.4)	398 (15.3)	279 (9.8)
First-pass regressions			
Conventional form	5.5 (1.5)	11.8 (2.2)	3.0 (1.2)
Standard metonym	7.1 (1.9)	11.2 (2.2)	2.9 (1.0)
Logical metonym	4.8 (1.5)	21.3 (3.3)	5.5 (1.6)
Total time			
Conventional form	448 (21.7)	476 (22.2)	286 (13.5)
Standard metonym	472 (25.1)	474 (20.4)	295 (18.9)
Logical metonym	533 (41.2)	517 (46.0)	338 (23.7)

Note. Reading times are in milliseconds and regressions are in percentages. Standard errors are presented in parentheses.

Total time on the verb region again showed a difference between conditions, $F_1(2, 58) = 3.60$, $p < .04$; $F_2(2, 46) = 3.24$, $p < .05$; min$F'(2, 101) = 1.71$, $p < .19$, with the conventional form and the standard metonym conditions taking comparable time to read, $M_{diff} = 24$ msec, $CI_{95\%} = \pm 42$, ts < 1, and the logical metonym taking longer than the conventional form condition, $M_{diff} = 85$ msec, $CI_{95\%} = \pm 58$, $t(29) = 2.60$, $p = .01$; $t(23) = 2.45$, $p = .02$; min$F'(1, 50) = 3.18$, $p = .08$. Although the logical metonym form took on average 60 msec ($CI_{95\%} = \pm 61$) longer to read than the standard metonym, this difference was not fully significant, $t(29) = 1.86$, $p = .07$; $t(23) = 1.82$, $p = .08$; min$F'(1, 51) = 1.70$, $p < .20$.

The spillover region showed a significant effect in the within-subjects analysis, but not in the within-items analysis, $F_1(2, 58) = 4.58$, $p < .02$; $F_2(2, 46) = 2.24$, $p > .11$; min$F'(2, 86) = 1.50$, $p < .23$. Means comparisons showed no difference between the conventional form and the standard metonym conditions, $M_{diff} = 8$ msec, $CI_{95\%} = \pm 27$, ps > .21, but the logical metonym condition took longer than the conventional form condition, $M_{diff} = 51$ msec, $CI_{95\%} = \pm 33$, $t(29) = 2.81$, $p < .01$; $t(23) = 2.12$, $p < .05$; min$F'(1, 45) = 2.86$, $p < .10$. On average, the logical metonym condition was read 43 msec slower ($CI_{95\%} = \pm 30$) than the standard metonym condition, although this difference was only significant in the participants' analysis, $t(29) = 2.38$, $p = .02$; $t(23) = 1.03$, $p = .31$; min$F'(1, 32) < 1$.

3. Discussion

A priori, one might have imagined that all forms of deferred interpretation are costly to process, given that they have been said to involve common linguistic mechanisms such as meaning or reference transfer (Nunberg, 1995). However, our data indicate that only some forms of deferred interpretation are taxing for the language comprehension system. The differences emerged clearly in measures of first-pass regressions and total times. Specifically, we found that logical metonyms such as *began Dickens* were more costly to interpret than conventional expressions, but we did not find this pattern for standard metonyms such as *read Dickens*.

That metonymic expressions such as *read Dickens* are as easy to process as conventional expressions such as *met Dickens* strongly suggests that deferred interpretation per se is not computationally costly for the language processor. It might be useful for some purposes to assume that all forms of deferred interpretation share a common linguistic mechanism, such as meaning or reference transfer (e.g., Nunberg, 1978, 1979, 1995; Ward, 2004). However, our data indicate that these constructs do not appear to provide a useful classification of compositional cost and, hence, do not appear to accurately characterize the means through which comprehenders arrive at the respective interpretations.

Our experiment clearly establishes that expressions involving logical metonymies are costly to interpret. Why is this so? We suggest that these expressions require a type of enriched composition, and it is compositional complexity, not deferred interpretation per se, that engenders the observed cost. That is, for readers to interpret the expression *began Dickens* as "began reading the works of Dickens," they must construe the proper noun *Dickens* as "the works of Dickens," just as in the case of a Producer-for-Product metonymy such as *read Dicken*s. Crucially, however, they must also embed this NP within an event structure to properly compose an interpretation of the VP that satisfies the aspectual requirements of the event-selecting verb. This

requires readers to generate a plausible event associated with the NP and then build an event representation of the complement. We suggest that the costs associated with interpreting these expressions reflect the operations readers undertake to build this overall event representation. Following formal approaches such as Pustejovsky's (1995), we assume that this aspectual mismatch between the verb (e.g., *started*) and the NP (e.g., *Dickens*) triggers a coercion operation: Readers compose an interpretation of the VP by first selecting a suitable activity (e.g., reading) and then constructing an eventive interpretation of the complement, namely, [began[reading (Dickens's works)]]. We suggest that this coercion operation slows the processing of *began Dickens,* not the operations that transfer the reference of *Dickens* from Dickens the person to Dickens's writings. Specifically, we attribute the cost to the need to construct an eventive interpretation of the compliment.

There are other cases that show additional processing cost for specific interpretations of a word. For example, Gerrig (1989) used existing compounds such as *cave man* in contexts that require them to be interpreted in a novel way (e.g., a new faculty member who can teach about caves). Increased reading times were found for innovative uses of readily accessible conventionalized compounds, demonstrating that constructing a new sense of a word can be more costly than selecting an existing one. At first glance, this appears comparable to our effects. However, there are quite notable differences between the two cases. Unlike the novel senses in Gerrig's experiment, the logical metonymy sense is not semantically unrelated to an existing sense. In addition, the deferred interpretation of *Dickens* (i.e., Dickens's works) is the sense that is used in the eventive interpretation, and this sense is already established, as supported by the lack of reading time differences between the conventional and the standard metonym conditions. Lastly, unlike the novel, unpredictable senses in Gerrig's experiment, the use of a logical metonymic sense is very common and productive.

Our results are inconsistent with any approach that assumes that the same processing operations underlie the resolution of logical metonymies and other types of metonymy and, thus, do not support at least one reading of Nunberg's (2004) argument that "deferred reference … sense transfer … and logical metonymies … all involve the same type of generalizations" (p. 350). However, we note that Nunberg (2004) expressed the caveat that sentences with certain logical metonymies such as *We enjoyed the book,* although in principle interpretable as cases of meaning transfer, do not fulfill the criterion of noteworthiness and therefore might achieve their interpretation constructionally. It is not clear to us why *started Dickens* should be regarded as less noteworthy than *read Dickens,* but our results do provide evidence for the intuition that the interpretation of logical metonymies may be more reliant on complex compositional operations.

In conclusion, we have shown that expressions such as *began Dickens* engender a processing cost that does not occur for expressions such as *read Dickens.* Specifically, interpreting a proper noun as meaning "reading Dickens's works" is more costly than interpreting it as meaning "Dickens's works." This suggests that there is not a single psychological mechanism of meaning transfer. Instead, the results indicate that there is a straightforward process of accessing a familiar metonym, but that a more complex process of enriched composition is involved in the resolution of logical metonymy. Although we are not able to fully catalog all types of structures that might require enriched forms of composition, the evidence to date indicates that, in addition to the types of expressions examined here, enriched composition is required

whenever eventive verbs are paired with a nonevent complement. However, similar operations may be necessary to interpret a broad range of constructions that have been the topic of recent lexical semantic research (see Jackendoff, 1997; Piñango, Zurif, & Jackendoff, 1999; Pustejovsky, 1995).

Notes

1. We adopt Nunberg's (2004) use of the term *deferred interpretation* as an umbrella expression for cases that might involve both meaning (or sense) transfer and reference transfer (see Ward, 2004). Unfortunately, the literature is rife with different terms, often used in slightly different ways (e.g., deferred reference, deferred meaning, predicate transfer, systematic polysemy).
2. This type of operation is also required in related structures such as *The climber imagined the ice survivable,* where the adjective *survivable* is morphologically derived from the event-selecting verb *survive* (McElree, Pylkkänen, Pickering, Traxler, in press). Here, the adjective forces coercion of the embedded subject NP *the ice* into an eventive interpretation (e.g., "climbing of the ice").
3. We employed a higher cutoff value than most eye-tracking studies (which typically use cutoffs of 800 or 1,000 msec) because some of the names were not very common or had uncommon orthography. Analyses with lower cutoff values show the same patterns as reported here.
4. The lower degrees of freedom are the result of missing data in the spillover region.

Acknowledgments

This research was supported by National Science Foundation Grant 0236732 (awarded to BM). Part of this research was conducted while the second author was a postdoctoral fellow of the Belgian Science Foundation. We would like to thank Gregory Murphy and Lewis Bott for helpful comments.

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Appendix
Experiment: Items

The sentences for each item triplet were the same except for the verb. The first verb in the angular brackets was used in the conventional form condition, the second verb was used in the standard metonym condition, and the third verb was used in the logical metonym condition.

1. The gentleman [spotted | read | started] Dickens while waiting for a friend to arrive.
2. The philanthropist [invited | published | finished] T. S. Eliot just before the beginning of the holidays.
3. The educated slave [greeted | quoted | began] Aristotle at the festival in Athens that was held during the spring.
4. The housewife [befriended | paraphrased | continued] Agatha Christie in the town by the seaside.
5. The student [welcomed | read | continued] Sartre while living in the south of France.
6. The scientist [contacted | translated | finished] Darwin before going to live in Amsterdam.

7. The editor already [invited | published | completed] Rushdie before the death threats were issued.
8. The lecturer [spotted | studied | began] Hemingway when he was traveling around the world.
9. The princess [greeted | read | started] Chaucer in the palace near to London.
10. The aspiring poet [contacted | paraphrased | mastered] Yeats because it seemed important to do so.
11. The scholar [welcomed | translated | continued] Victor Hugo after returning from the meeting.
12. The socialite [befriended | quoted | completed] Virginia Woolf at a weekend in the country.
13. The retired professor [welcomed | translated | finished] Freud in the sitting room of the old mansion.
14. The mayor [invited | paraphrased | continued] Wordsworth after wrapping up the pressing business.
15. The historian [spotted | studied | began] E. M. Forster during a visit to the university.
16. The editor [contacted | published | mastered] Wittgenstein just before resigning from the firm.
17. The wise woman [contacted | studied | finished] Dostoyevsky during a visit to the beautiful town of her birth.
18. The Russian priest [greeted | translated | started] Tolstoy for the first time in a secluded monastery.
19. The entrepreneur [befriended | published | completed] D. H. Lawrence after deciding to spend lots of money supporting novelists.
20. The court employee [spotted | quoted | continued] Goethe on a bench in the beautiful gardens of the palace.
21. The old spinster [invited | paraphrased | began] Jane Austen toward the end of the summer.
22. The priest [welcomed | studied | started] James Joyce because it seemed the right thing to do.
23. The rich merchant [befriended | quoted | mastered] Descartes while living in a wealthy suburb of Paris.
24. The journalist [greeted | read | completed] George Orwell before having to go abroad for a year.