

Dwarf-Class Verbs, Theta-Theory and Argument Linking

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1. Introduction

This paper investigates a class of English verbs that pose a challenge for theories of the relation between thematic roles and syntactic structure. The search for principles that govern this relation is a central task of linguistic theory, and the problem of formulating these principles—the so-called “linking problem”—provides the background for the present study. Traditional solutions to the linking problem have taken a common form: The grammar is assumed to include a thematic hierarchy (e.g., Agent > Theme > Goal > Oblique [Larson 1988]) and a linking principle (e.g., the UTAH [Baker 1988]) that makes reference to structural positions. (See, *inter multa alia*, Baker 1997, Dowty 1991, Fillmore 1968, Grimshaw 1990, Jackendoff 1987, Perlmutter and Postal 1984, and Speas 1990.)¹

Experiencer predicates are a classic difficulty for solutions of this form, because experiencers vary in where they surface relative to other theta-roles. Consider, for example, the alternation in (1):

- (1) a. John worries about the economy.
b. The economy worries John.

Keeping to the basic two-component form of the solution, there are two ways to approach the alternation in (1). On the one hand, it might be held that *the economy* in (1a) doesn't have the same theta-role as *the economy* in (1b). The claim would be that in (1a), it is a 'Theme' or 'Subject Matter' (SM), whereas in (1b) it is a 'Causer'. This claim preserves the linking principles by enlarging the theta hierarchy. This was the approach taken by Pesetsky (1995).

Alternatively, it might be held that *the economy* in (1a) and (1b) has the same theta-role, but that (1b) is derived by movement, allowing the Experiencer to be projected above the Theme/SM at the level at which thematic relations are established. This claim preserves the linking principles by positing a syntactic transformation, but the theta-hierarchy is kept simpler. This was the approach taken by Belletti and Rizzi (1988).

Empirical arguments aside, a significant conceptual advantage of the second approach is that it eliminates the need for a specialized 'Causer'-type theta-role in experiencer predicates. It does so by reanalyzing these arguments as moved Themes/SMs. This simplification of the theta-hierarchy can be held up as an advantage as long as we do not find experiencer predicates in which the two roles (Causer and SM) co-occur. Indeed, it appears on the surface that we don't find such predicates. (2) modifies (1) to show that the Causer and the SM may not both be present. (3) illustrates that the restriction holds of experiencer predicates generally. This is Pesetsky's (1995) "Target/Subject Matter Restriction": the Causer and SM, despite being distinct theta-roles, apparently cannot co-occur in the same experiencer predicate.

- (2) *The stock prices worry John about the economy.

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¹ For a very different view, on which theta-roles are not taken as primitives, see Hale and Keyser (1993).

- (3) a. *The article in the Times angered Bill at the government.
 b. *The Chinese dinner satisfied Bill with his trip to Beijing
 c. *The distant rumbling frightened Mary of another storm
 [Pesetsky 1995:60]

In what follows, I will argue that we *do* find experiencer predicates where all three roles co-occur, but that in such predicates the Experiencer is unpronounced. I term these “*dwarf*-class verbs”, and this paper explores some properties of the class that bear on linking theories. The rest of the paper is organized as follows. Section 2 introduces the *dwarf* class and outlines a few of its general characteristics. Section 3 addresses the thematic structure of these verbs, arguing that their specification includes an (unprojected) Experiencer role. Section 4 discusses the consequences of this thematic structure for the approaches to experiencer predicates outlined above. Section 5 argues that the *dwarf* class motivates a reformulation of Pesetsky’s restriction, and shows how this reformulation offers a new typology of experiencer predicates. Section 6 discusses additional issues in the meaning of certain *dwarf*-class verbs. Section 7 concludes and speculates on some directions for further research.

2. The *dwarf* class

We turn now to the predicates in question. Verbs in this previously unnoted class² express two overt arguments, and have a meaning such that the non-agentive subject causes one to perceive or experience the object in some specific way. Three examples are given below.

- (4) a. The mansion dwarfs the house next door.
 b. That necklace accentuates her eyes.
 c. This pillar obscures the stage.

The particular way in which perception is altered varies from verb to verb. In (4a), the mansion causes the house next door to be perceived as small(er). In (4b), the necklace causes the eyes to be perceived as more prominent. In (4c), the pillar causes the stage to be perceived incompletely. Further examples of *dwarf*-class verbs are given in (5).

- (5) a. This rug emphasizes the shape of the room.
 b. A few high-profile blunders overshadowed his achievements.
 c. Those heels exaggerate your height.
 d. The water distorts the rocks below
 e. The lens magnifies the penny.
 f. Last night’s fire underscores the need for better building safety.
 g. The smoke blurred his face.
 h. Her charitable donations highlight her generous nature.

A first observation about these verbs is that their objects are not actually affected; they undergo no change of state. In (4a), for instance, nothing happens to the house. It is not actually made smaller by the mansion next door. Rather, it is made smaller only in the mind of a potential perceiver of the scenario. Similarly, (4b) and (4c) do not describe any change of state undergone by the eyes or the stage. They merely describe a change in the way those objects are perceived or experienced. This distinction is illustrated nicely by comparing verbs in this class (*dwarf*, *magnify*, *highlight*, etc.) with counterparts whose objects are in fact affected (*shrink*, *enlarge*, *embellish*, *beautify*, etc.)

A second observation is that the subjects of *dwarf*-class verbs are not agents. Indeed, the subjects are often inanimate. Nevertheless, it should be noted that many of the *dwarf*-class verbs have agentive counterparts (6):

² It goes unmentioned, e.g., in Levin’s (1993) comprehensive investigation of English verb classes, which mentions a few of the individual verbs in separate contexts that do not touch on the issues presented here.

- (6) a. John emphasized the importance of the task.
 b. Mary distorted the issue.
 c. Bill exaggerated his expertise.

I will leave these aside here, since they do not pose the same issues for linking theories.

Turning now to an informal consideration of the meaning of these verbs, we find that the *dwarf* class can be fruitfully paraphrased with the template in (7):

- (7) SUBJ causes one to perceive/experience OBJ in way W
 where W is specific to the individual verb

Consider as an example the sentence in (8) (= 4b):

- (8) That necklace accentuates her eyes.

Intuitively, this sentence is true iff the necklace causes a state of affairs where the eyes are perceived/experienced as being particularly prominent, striking, etc. It is false if the eyes are so perceived/experienced, but the necklace is not the cause. It is false if the necklace is the cause only of some other state or event involving the eyes (say, one where another object is perceived/experienced, *using* the eyes, as being particularly prominent, striking, etc.) These conditions are consistent with the paraphrase in (7) if we assume that, for *accentuate*, W = prominent, striking, etc. The paraphrase in (7) is additionally valuable, because it makes reasonably transparent the thematic specification of the *dwarf* class verbs, to which we now turn.

3. Thematic structure

I propose that the thematic specification of *dwarf*-class verbs includes, in the terminology of Pesetsky (1995), a Causer, a Subject Matter (SM), and an Experiencer. The subject takes the Causer theta-role, and the object takes the SM theta-role. The Experiencer is not expressed overtly (to be discussed below), but is present as an implicit argument. Evidence for this implicit Experiencer comes from the licensing of adjunct control.

Williams (1994) notes that implicit Experiencers can often act as controllers of the non-overt subjects of adjuncts. This is especially true of adjuncts denoting a perspective. To a limited extent, this type of adjunct control is also licensed by “predicates of personal taste” (see Lasersohn 2005, Stephenson 2007) and other strongly evaluative predicates. If we adopt Stephenson’s proposal that such predicates include an unpronounced experiencer or “judge” argument (“PRO_j”), we may assume that the ability to control into adjuncts of perspective diagnoses the presence of an unpronounced Experiencer theta-role, whether this role is projected in the syntax as a null element, or not projected at all.³ This is shown in (9) and (10).

- | | | | |
|------|----|--|------------------------|
| (9) | a. | From the roof, the men seemed small. | [Implicit experiencer] |
| | b. | From the roof, it looked like he was dead. | [Implicit experiencer] |
| | c. | From the roof, the stars were beautiful. | [Implicit experiencer] |
| | d. | *From the roof, the men were running around. | [No experiencer] |
| | e. | *From the roof, John kissed Mary. | [No experiencer] |
| (10) | a. | Standing on the patio, the plants look unhealthy. | [Implicit Experiencer] |
| | b. | Standing on the patio, it seemed the guests were having fun. | [Implicit Experiencer] |
| | c. | *Standing on the patio, the plants are unhealthy. | [No experiencer] |
| | d. | *Standing on the patio, the guests were having fun. | [No experiencer] |

³ In narrative contexts, the subject of an adjunct can sometimes be controlled by a discourse-prominent DP (usually the speaker), even in the absence of an implicit-experiencer predicate:

i. I stepped outdoors for a moment. I stood and watched. Then, standing on the patio, John kissed Mary. What is important, though, is that predicates with implicit experiencers license adjunct control *without* such contexts.

We have now seen that control into adjuncts of perspective is licensed by implicit experiencers. Crucially, *dwarf*-class verbs also license control into adjuncts of perspective, suggesting that their thematic specification includes an Experiencer role.

- (11) a. From the roof, the skyscrapers dwarfed the people below.
 b. From the roof, the smog effect obscures/magnifies/distorts the mountains.
 c. From the roof, the sunset accentuates/highlights the skyline.
 d. Standing on the patio, the plants obscure/highlight the duck pond.

Thus, although the Experiencer role is not expressed overtly, its presence is diagnosed by the fact that *dwarf*-class verbs pattern with other unpronounced-Experiencer predicates with regard to the licensing of adjunct control. We have evidence, then, that the thematic specification of the *dwarf* class includes a Causer, an Experiencer, and a SM. Let us turn now to the consequences of this particular specification for the thematic hierarchy and linking principles.

4. Some consequences for the theta-hierarchy

The *dwarf* class has two main consequences for linking theories, one general and one specific. The general consequence comes from the fact that the subject of *dwarf*-class verbs is an independently needed Causer that cannot be analyzed away as a Theme/SM, because this role is already borne by the object of the verb. The existence of the *dwarf* class thus constitutes a general argument against any theta-hierarchy that does not admit an independent Causer role (and any account of experiencer predicates that posits such a hierarchy). Pesetsky's (1995) theta-hierarchy, shown in (12), seems better equipped to handle *dwarf*-class verbs.

- (12) ... Causer > Experiencer > Target/Subject Matter ...

The specific consequence comes from the fact that *dwarf*-class verbs are an instance of the Causer and SM theta-roles co-occurring in the same predicate. The *dwarf* class thus provides new evidence for the distinctness of the Causer and SM roles—the concrete evidence that was missing from Pesetsky's (1995) account. At the same time, however, *dwarf*-class verbs present an interesting problem for Pesetsky's account, as they appear to violate the ban on the co-occurrence of the Causer and SM roles. Recall that this ban was originally proposed to account for data like (3) above, repeated in (13):

- (13) a. *The article in the Times angered Bill at the government.
 b. *The Chinese dinner satisfied Bill with his trip to Beijing
 c. *The distant rumbling frightened Mary of another storm
 [Pesetsky 1995:60]

In the next section I will argue that the *dwarf* class motivates a reformulation of Pesetsky's original restriction, and show that this reformulation has some welcome results.

5. A Three-way Overt Ban

The reformulated restriction that I propose involves a *three-way* ban on the *overt* co-occurrence of Causer, SM, and Experiencer.

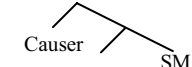
- (14) *Three-way overt ban:*
 A verb may not overtly realize all three theta-roles Causer, Experiencer, and SM.

This reformulation correctly rules out the examples in (13), and correctly allows *dwarf*-class verbs, which avoid violation because they lack an overt Experiencer.⁴ The three-way overt ban also offers an explanation for why *dwarf*-class verbs cannot allow overt Experiencers (15-17):

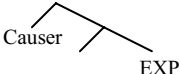
- (15) a. *The bridge dwarfed Mary the lighthouse.
 b. *The bridge dwarfed the lighthouse to Mary.
 (meaning: “The bridge caused Mary to perceive/experience the lighthouse as smaller.”)
- (16) a. *Nixon’s crimes overshadowed Americans his accomplishments
 b. *Nixon’s crimes overshadowed his accomplishments to Americans.⁵
 (meaning: “Nixon’s crimes caused Americans to perceive/experience his accomplishments as less prominent/important.”)
- (17) a. *The glass magnified me the coin.
 b. *The glass magnified the coin to me.
 (meaning: “The glass caused me to perceive/experience the coin as larger.”)

Finally, the three-way overt ban—coupled with Pesetsky’s (1995) theta hierarchy in (12), and a “Relativized UTAH” linking principle (see Baker 1997, Larson 1990)—makes possible a unified typology of two-place experiencer predicates. The ban in (14) makes available three logical possibilities for such predicates. All possibilities are attested, and the thematic hierarchy predicts the right syntactic structure for all three.

If a predicate overtly expresses the Causer and the SM, then the hierarchy dictates that the Causer is projected as the subject, and the result is a verb of the *dwarf* class, as illustrated in (18).

- (18) **Overt Arguments**
 {Causer, SM}
- Linking Principle Applies
- Syntactic Structure**


If a predicate overtly expresses the Causer and the Experiencer, then the hierarchy dictates that the Causer is the subject, resulting in a traditional Obj-Exp psych verb of Belletti and Rizzi’s *preoccupare* class, as illustrated in (19).

- (19) **Overt Arguments**
 {Causer, EXP}
- Linking Principle Applies
- Syntactic Structure**


If a predicate overtly expresses the SM and the Experiencer, then the hierarchy dictates that the Experiencer is the subject, resulting in a traditional Subj-Exp psych verb of Belletti and Rizzi’s *temere* class, as illustrated in (20):

⁴ Pesetsky (1995:321n184) mentions in an endnote “some rogue verbs” that are possible exceptions to his T/SM restriction. They remain possible exceptions to my reformulation. An example, with his judgment:

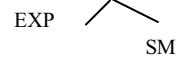
i. ?Mary’s lecture interested me in mathematics.

⁵ There is a certain irrelevant reading on which this sentence is acceptable—a reading on which *to* does not really introduce an argument of *overshadow* but rather heads an adjunct PP modifying the rest of the sentence. This reading is more naturally phrased with the PP in initial position. Several other apparent exceptions are of this nature.

(20) **Overt Arguments**

{SM, EXP}

Linking Principle Applies

Syntactic Structure**6. Additional Issues**

In this section I address two additional issues regarding the *dwarf* class. The first concerns the question of whether or not these verbs are “zero-derived” in the sense of Pesetsky (1995). Unlike the causative Obj-Exp verbs discussed by Pesetsky, *dwarf*-class verbs are not plausible candidates for zero-derivation, since their roots are never Subj-Exp verbs. We thus correctly predict that *dwarf*-class verbs are able to undergo nominalizations (21) without violating what Pesetsky terms “Myers’ generalization” (the generalization that there is no further derivational affixation of zero-derived words):

- (21) a. The glass’s magnification of the coin
 b. The makeup’s accentuation of her eyes
 c. The water’s distortion of the rocks

The second issue concerns two idiosyncratic restrictions on the semantics of some *dwarf*-class verbs. The verb *magnify* carries an additional requirement that the altered perception/experience must involve the creation of an optical virtual image (as via a lens). If no such image is involved, the verb is infelicitous ⁶:

- (22) a. #That rug really magnifies the room.
 (cf. “That rug really makes the room look bigger”)
 b. #The dachshund magnified the golden retriever.
 (cf. “The dachshund made the golden retriever look bigger”)

The verbs *dwarf* and *overshadow* carry the additional requirement that the altered perception/experience must involve comparison with the subject of the verb. If no such comparison is involved, these verbs are infelicitous:

- (23) a. #That photo dwarfs my head.
 (cf. “That photo makes my head look small.”)
 b. #This special lens dwarfs the penny.
 (cf. “This special lens makes the penny look small.”)
 c. #This article overshadows my role in the project.
 (cf. “That article makes my role in the project seem less prominent.”)
 d. #His autobiography overshadowed his youthful indiscretions.
 (cf. “His autobiography made his youthful indiscretions seem less prominent.”)

Of course, all the sentences in (23) are felicitous if comparison is involved, to varying degrees of pragmatic oddness. (23d), for example, might describe a celebrity who, after being known primarily for his wild years as a young man, grows up to write a masterpiece of an autobiography, and achieves

⁶ This requirement really does appear to be idiosyncratic to the English verb *magnify*. The French verb *grandir*, for instance, has no such constraint:

- i. Le tapis grandit le salon.
 ‘The rug makes the room look bigger’
 ii. Les arbres aux alentours grandissent la maison.
 ‘The surrounding trees make the house look bigger.’

Sabine Iatridou (p.c.) points out that the same holds for the verb *μεγαλώνω* in Modern Greek.

a new reputation because of it. (23a) is conceivable if one imagines someone holding up an enormous photograph, and so on.

7. Concluding notes and further questions

Many questions remain for further inquiry. The reformulation of Pesetsky's restriction is currently stipulative. It remains to be seen whether a principled explanation is available, and particularly whether it could be incorporated into a linking principle (like RUTAH) as a constraint, or whether it is explainable on the view taken by more recent authors that arguments are introduced by independent functional heads (Pylkkänen 2002, Kratzer 1996).

Relatedly, it must be determined at exactly what level(s) of representation the unpronounced Experiencer of *dwarf*-class verbs is present. I have tacitly assumed (following Williams 1985) that it is represented as an unprojected theta-role, but I note that there is also a conceivable analysis where it is projected and represented syntactically as something like Stephenson's (2007) PRO_i.

Finally, the singling out of the *dwarf* class brings to light an interesting generalization: Why is it that *dwarf* class verbs in English seem to deal with only with purely perceptual experience (experiencing things as smaller, larger, more salient, etc.) while Subj-Exp verbs seem to deal only with evaluative or emotional experience (experiencing things as good, bad, scary, pleasurable, etc.)? That is, why are there no *dwarf*-class verbs such that *SUBJ verbs OBJ* means "SUBJ causes one to fear/like/hate OBJ"? And why are there no Subj-Exp verbs such that *SUBJ verbs OBJ* means "SUBJ perceives OBJ as large, small, tall, etc."—i.e, nothing like **John tall the tree*? This generalization seems fairly robust, and I leave its explanation as a question for further research, noting only that the generalization becomes apparent only once the *dwarf* class is recognized and compared with other classes of experiencer predicates.

This paper has introduced a hitherto unanalyzed class of English verbs, and showed how their unique thematic specification poses various problems for the linking between thematic roles and syntactic structure. It was argued that the specification of the *dwarf* class includes a Causer, an Experiencer, and a Subject Matter (SM). The implicit Experiencer was evidenced by the ability of *dwarf*-class verbs to control the subject of "perspective" adjuncts. *Dwarf*-class verbs provided an instance of the Causer and SM theta-roles co-occurring in the same predicate, thus lending support to Pesetsky's (1995) theta-hierarchy for experiencer predicates over Causer-less competitors. At the same time, the *dwarf*-class created a problem for Pesetsky's specific analysis: a violation of his Causer/SM co-occurrence restriction. Based on this problem, it was argued that the class motivated a three-way ban on the overt co-occurrence of Causer, SM, and Experiencer theta-roles. Finally, it was shown that this three-way overt ban provides a new way of looking at two-place experiencer predicates, with the *dwarf*-class verbs filling a theoretically interesting gap.

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