Syntagmatic and Paradigmatic Dimensions of Causee Encodings

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Abstract:

There have been essentially two types of theoretical approaches to account for the grammatical relations associated with the causee argument of causative constructions. Ignoring the specifics of particular theories, there are transitivity based approaches in which the causee is a direct object when the embedded clause is intransitive, and an indirect object or oblique when the embedded clause is transitive. This pattern finds considerable cross-linguistic support. On the other hand, there are languages in which the causee exhibits alternative grammatical relations irrespective of transitivity: the causee direct object correlates with direct causation, while indirect object or oblique causees are associated with indirect causation. Such phenomena have motivated a semantic approach.

Focusing primarily on data from Spanish, we account for both sorts of phenomena by proposing a novel extension of Dowty's (1991) proto-property proposal, thereby rendering it a comprehensive model of argument selection for both simple and complex predicates. According to Dowty's original Argument Selection Principle, the most proto-patientive argument in a single argument structure tends to be encoded as a direct object. In the case of causatives with intransitive base predicates, the most proto-patientive argument will be the causee. However, if the embedded clause is transitive, the causee will be less proto-patientive that the embedded patient, and will not be encoded as a direct object. Thus, the Argument Selection Principle, operating in a SYNTAGMATIC fashion over co-arguments, effectively derives the transitivity-determined causee encodings. In order to address the effects associated with the semantic approach, we develop PARADIGMATIC interpretation of the Argument Selection Principle. That is, when the causee argument varies in degree of proto-patientivity, the most proto-patientive alternant is encoded as a direct object, and any decrease in proto-patientivity is reflected by relational encodings that are sequentially lower than direct object on the relational hierarchy. Thus, the transitivity and semantic effects of causee encoding are accounted for by the interaction of the syntagmatic and paradigmatic argument selection strategies. We propose that these two strategies represent organizing principles for argument selection information associated with lexical entries.

Finally, the interaction of these two selection strategies creates a tension in the encoding of causee arguments that is resolved in different ways in different languages. Hence, we suggest that some of the cross-linguistic variation with respect to causee encoding is due to the resolution of this conflict. Thus, we conclude by showing how these selection principles and lexical properties interact to derive a typology for well-attested patterns of variation in causee encoding.

1. Introduction

A fundamental problem in linguistic theory is the relationship between the lexical semantic properties of arguments and their grammatical encoding. Grammatical theories address this issue through mechanisms variously referred to as linking, mapping, or argument selection. The proposed mechanisms account for the range of encoding options associated with simple or underived predicators. In addition, they are often extended to address the grammatical encodings associated with derived and complex predicates. Causative formation is a phenomenon which typically motivates specific formulations of mapping proposals. Although there are many aspects of causative formation which have received theoretical analysis, in this paper we focus solely on a perennial problem directly concerned with the interaction between the semantics of predicates and the grammatical relation status of arguments: we examine the grammatical relation exhibited by the causee argument (i.e. the subject of the base predicate). For example, consider the Spanish examples in (1), where the causee argument is highlighted.

(1) a. Pedro LO hizo [salir]. intrans → DO causee

'Pedro made [HIM (DO) leave].'

b. Pedro LE hizo [comprar el coche]. trans → IO causee

'Pedro made [HIM (IO) buy the car].'

It has been proposed that this pattern is dependent simply on the transitivity of the embedded clause (cf. Aissen and Perlmutter 1976/1983, among others). On this view, the causee in (1a) is a direct object when the embedded clause is intransitive, while with embedded transitives, as in (1b), it is an indirect object. Such a transitivity-based approach to causee encoding was proposed as a universal in Perlmutter and Postal (1974), and was also basic to Comrie's (1976) account.

On the other hand, Hyman and Zimmer (1976) suggest, on the basis of French examples such as those in (2), that semantic/pragmatic factors play a role in the encoding of causee arguments. Notice that both examples in (2) involve embedded transitive clauses, where the causee 'the general' appears as an indirect object in (2a) and as an oblique in (2b).

(2) a. J'ai fait nettoyer les toilettes AU GENERAL. (Hyman and Zimmer 1976 (32))

'I made THE GENERAL (IO) clean the toilets.'

b. J'ai fait nettoyer les toilettes PAR LE GENERAL. (Ibid. (33))

'I had the toilets cleaned BY THE GENERAL (OBL).'

The glosses attempt to reflect the relevant semantic character of these constructions. Roughly speaking, the causee in (2a) is construable as being both directly affected by the action denoted by the matrix causative predicate and as being the facilitating agent of the embedded event. In contrast, the causee in (2b) is not directly affected. Rather, it is interpretable as a simple agentive actant in the caused event. Given that a semantic affectedness contrast often correlates with relational alternations like the object/oblique alternation in (2), there have been efforts to appeal to these recurrent semantic effects in accounting for the relational alternation (see the discussion of Comrie 1981 and Cole 1983 in section 3.3 below).

Transitivity-based and semantically-based effects in causative constructions have often been employed to support competing syntactic versus semantic approaches to causative formation. In the present paper we will account for the effects evident in (1) and (2) by developing an adaptation of Dowty's (1991) proto-role proposal concerning argument selection for simple predicates which is suitable to address complex predicate formation. We will argue that this augmented proto-property proposal resolves the apparent conflict between syntactic and semantic approaches to causee encoding.[1] Central to our proposal is a modification of Dowty's original formulation of Argument Selection. Whereas Dowty's selection principle is SYNTAGMATIC in that it compares sets of proto-properties of co-arguments in single argument structures, we propose an analogous PARADIGMATIC selection principle that compares the proto-property sets of single arguments which recur in lexically related predicates. In particular, we examine the alternative relational encodings associated with the causee argument of related lexical entries. We claim that these two selection principles represent important factors in the organization of certain aspects of the lexicon and that their interaction yields a comprehensive argument selection hypothesis adequate to account both for empirically attested syntactic and semantic patterns of causee encoding as well as for the rudiments of a cross-linguistic typology of causee encodings.

The paper is structured as follows: in section 2 we discuss aspects of the semantic/relational alternations exhibited by causative constructions; here we highlight three important phenomena associated with causee encoding which any account must address. These phenomena play a central role in the analysis we develop in Section 3, which is based on Dowty's proto-property proposal. Section 3 introduces the syntagmatic and paradigmatic strategies, discusses the particular proto-properties that participate in the semantic alternations, and examines the mechanics of argument selection. Section 4 discusses how our approach can be parameterized to account for cross-linguistic variation in causee encoding; this represents a typology of causee encoding options derived from the set of assumptions central to our proposal. Section 5

[1] See Comrie (1981), Cole (1983), Foley and Van Valin (1984), Mohanan (1991), Alsina (1992), and Van Valin and Wilkins (1996) for efforts to address this conflict employing different theoretical assumptions than those used here.

concludes with a discussion of what we view to be important issues addressed by our proposal.

2. Aspects of causee encoding

In this section we discuss three aspects of causee encoding which will form the basis of the analysis developed in section 3. In particular, we will be concerned with the types of semantically motivated relational alternations found in causee encodings. We will also demonstrate that these alternations are not limited to causative constructions. We will therefore suggest that the appropriate account of causee encoding alternations should be straightforwardly adaptable to other types of constructions as well.

2.1. Object/oblique versus direct/indirect object alternations

From a cross-linguistic perspective, causee arguments exhibit common patterns of relational alternations. In describing attested variations, it is necessary to distinguish the class of objects from the class of obliques, and within the class of objects, to distinguish between direct and indirect objects. Given these distinctions, we observe both object versus oblique alternations and direct object versus indirect object alternations.

The (indirect) object/oblique alternation is exemplified by the French example in (2), motivated by semantic considerations. As illustrated in (3), we see a similar pattern in Chichewâ, where in (3a) *kadzidzi* 'the owl' is encoded as an object, while this argument is an oblique in (3b). As discussed in Alsina (1992), this alternation, like the French equivalent, is associated with a semantic contrast in AFFECTEDNESS. That is, the causee in (3a) is interpretable as directly affected by the act of causation, whereas the causee in (3b) is not directly affected in this manner.

(3) a. Nûngu i-na-phík-íts-a KADZIDZI maûngu.

9-porcupine 9s-ps-cook-CAUS-fv 1A-OWL-OBJ 6-pumpkins-OBJθ

'The porcupine made the owl cook the pumpkins.' (Alsina 1992 (1b))

b. Nûngu i-na-phík-íts-a maûngu KWÁ KÁDZĪDZI.

9-porcupine 9s-ps-cook-CAUS-fv 6-pumpkins-OBJ TO 1A-OWL-OBL

'The porcupine had the pumpkins cooked by the owl.' (Ibid. (1a))

Thus, based on data from French, Chicheŵa, and other languages, we find object/oblique alternations that are semantically motivated.

In addition to the object/oblique pattern, we find alternations between different types of objects. For example, the Spanish example in (1) showed the causee argument alternatively encoded as a direct object and an indirect object. We observed that this alternation was dependent on the transitivity of the base predicate and not semantically motivated. Such syntactically-determined alternations are so well-attested cross-linguistically that, as mentioned above, they were thought to represent a universal strategy for causee encoding (cf. Perlmutter and Postal 1974; but cf. Cole 1983, Gibson and Raposo 1986, Davies and Rosen 1988, Baker 1988, among others).

The patterns evident in Chicheŵa and French appear to suggest that object/oblique alternations correspond to a semantic contrast, while direct/indirect object alternations in Spanish appear to be determined by the transitivity of the base predicate. However, there is evidence for the other two logical possibilities, namely object/oblique alternations determined by transitivity and direct/indirect object alternations determined by semantic factors.

With respect to the former possibility, Finnish exhibits a transitivity-determined object/oblique alternation, as illustrated in (4):

(4) a. Kylmä pakkasilma yski-tt-i HÄN-TÄ.
cold frosty weather cough-CAUS-3SG HIM/HER-OBJ
'The cold frosty weather made him/her cough.'

b. Minä raken-nut-in talon (MUURAR-EILLA).
I built-CAUS-1SG house-OBJ (MASONS-OBL)
'I made the masons build the house.'

The following descriptive generalization holds of this pattern:

(5) TRANSITIVITY HYPOTHESIS:

a. Intransitive base predicate → direct object causee

b. Transitive base predicate → indirect object or oblique causee

The second possibility is attested in Spanish, which in addition to a transitivity-determined alternation, exhibits a semantically-based alternation between direct and indirect objects. This pattern is discussed in Strozer (1976), Finnemann (1982), and Treviño (1990, 1992), among others; they note that the grammatical relation of the causee can alternate between direct and indirect object, irrespective of the transitivity of the embedded clause. Strozer relates these encoding options to a semantic contrast which fits into the familiar pattern of semantic/relational alternations typified by the affectedness contrast found in Chicheŵa and French causatives.[2] In

[2] A similar relational alternation with familiar semantic effects has been noted in some varieties of French (cf. Hyman and Zimmer 1976, Dorel 1980, Reed 1992 and 1993, and Authier and Reed 1991). See also Kuroda (1965) for such alternations in Japanese. Shibatani (1973, 1976) also discusses the Japanese facts, and notes similar facts in Korean, and Quechua. With respect to Korean, see also Kang (1984), Gerdts (1990), Park (1994), and DeSimone (1997). Finally, see Comrie (1981) and Cole (1983) for a survey of similar facts in a number of languages.

(6) we see that the embedded agent of a transitive predicate can be encoded with either grammatical relation. In (6a), the adverbial *a la fuerza* 'by force' indicates a clearly affected causee. In (6b), we see that the context suggests a less affected causee.

(6) Embedded Transitive (Strozer 1976 (6.90))

a. LA/??LE hice [probarlo] a la fuerza.

'I made HER (DO/??IO) [try/taste it] by force.'

b. LE/??LA hice [probarlo] diciéndole que era riquísimo.

'I had HER (IO/??DO) [try/taste it] by telling her it was delicious.'

Example (7) illustrates that the same semantic contrast with the direct/indirect object alternation is possible with intransitives.

(7) Embedded Intransitive (Strozer 1976 (6.88-89))

a. LA/??LE hice [entrar] a patadas.

'I made HER (DO/??IO) [enter] with a kick.'

b. Le pedí que entrara y después de que entró le expliqué

por qué LE/??LA había hecho [entrar].

'I asked her to enter, and after she entered, I explained

why I had HER (IO/??DO) [enter].'

It is possible to generalize over the patterns attested in Spanish, Chichewâ, and French, despite differences in grammatical relations. In particular, given the standard RELATIONAL HIERARCHY in (8), an AFFECTEDNESS HYPOTHESIS concerning semantic interpretation and relational encoding can be stated as in (9):

(8) RELATIONAL HIERARCHY: (DO > IO > OBL)[3]

(9) AFFECTEDNESS HYPOTHESIS: When a causee argument exhibits a semantic alternation, then an alternant with a more affected interpretation will be realized as a grammatical relation that is higher on the Relational Hierarchy than the relational encoding of the non-affected alternant.

This hypothesis accounts for the semantic/relational alternations independent of particular relations. Thus, in Chicheŵa, the object causee is higher than the oblique causee, and the former is interpreted as more affected. In Spanish, on the other hand, the direct object causee is higher than the indirect object causee, and therefore, the direct object causee is interpreted as affected.

Thus far we have formulated two provisional hypotheses: the Transitivity Hypothesis in (5) and the Affectedness Hypothesis in (9). Both hypotheses predict widely attested patterns.

2.2. A three-way contrast

The Affectedness Hypothesis in (9) is formulated in terms of a hierarchy. Although up to now we have focused on two-way alternations, the hierarchical nature of the Affectedness Hypothesis suggests the possibility for three-way semantic contrasts, correlated with a three-way relational encoding. We find such a three-way contrast in Spanish. In addition to the direct/indirect object causees illustrated in the previous section, Spanish has a causative construction that resembles the oblique causee constructions of French and Chicheŵa. In (10), the embedded agent *los mejores arquitectos* 'the best architects' is an oblique argument, marked with the preposition *por* 'by'.

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[3] We omit the SUBJ relation from the hierarchy in (8) because it plays no role in the encoding of causee arguments. The postulation of a principled correspondence between a Relational Hierarchy and the semantics of causatives is also posited for Kashmiri data in Syeed (1985).

(10) Hicieron [diseñar estas casas (POR LOS MEJORES ARQUITECTOS)].

‘They had [these houses designed (BY THE BEST ARCHITECTS)].’

As often observed, the causee in these constructions is interpreted purely agentively; we interpret this as expressing a general consensus that this argument is not affected by the causative predicate, but is merely a participant in the caused event.[4] (11) shows that a (silent) oblique causee is possible with an intransitive base predicate:

(11) Este amo hizo trabajar duro.

‘This boss made (people - unexpressed OBL) work hard.’

The oblique causee constructions in (10-11), taken together with direct/indirect object alternations in (6-7), suggests a three-way semantic contrast, corresponding to a three-way relational alternation. The generalization in (9) applies to these data as follows: the clearly affected argument appears as a direct object in (6a-) and (7a), the clearly unaffected argument appears as an oblique (10), while the causee of intermediate semantic status appears as an indirect object in (6b) and (7b):[5]

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[4] There is a complicating factor with respect to the expression of oblique causees in Spanish. The example in (10) is cognate with the well-known *faire-par* construction in French (cf. (2b), Kayne 1975, among many others). Spanish *faire-par* constructions differ from their French counterparts in that the oblique agentive phrase is usually dispreferred. Thus, while many speakers accept an overt oblique causee in example (10), many find an overt causee unacceptable in such examples. The conditions governing these judgments are presently unclear. Given that most examples of Spanish *faire-par* constructions cited in the literature do not involve overt oblique causees, it is important to note that these are, nevertheless, standardly interpreted as instances of the oblique causee causative construction.

[5] This three-way distinction corresponds to the frequently observed cross-linguistic correlation between semantic properties of the causee and its surface expression; this is the essence of what we have called the Affectedness Hypothesis (cf. Shibatani 1973, 1976, Comrie 1981, and Cole 1983, among others).

(12) Spanish Causee Encodings

a. Most affected causee → DO (6-7a)

b. Somewhat affected causee → IO (6-7b)

c. Non-affected causee → OBL (11)

2.3. Parallelisms with simple predicates

So far we have limited our attention to relational alternations that are found in causative constructions. One might wish to attribute these effects to the fact that causative constructions involve complex predicates. This has been proposed in a number of approaches, including the various RG CLAUSE UNION analyses (e.g., Perlmutter and Postal 1974, Gibson and Raposo 1986, Davies and Rosen 1988, among others), as well as the ARGUMENT-LINKING approach in Alsina (1992). However, it turns out that the correspondences between semantic distinctions and relational alternations extend beyond causative constructions. For example, in Spanish we find a very similar alternation with respect to the experiencer argument of psych-predicates. As reported in Fontana (1991) and Treviño (1990, 1992), the experiencer argument alternates between direct and indirect object. Corresponding to this relational alternation is a semantic contrast, which has been characterized as direct versus indirect causation. Consider the examples in (13-14). In the (a) examples, the experiencer arguments are encoded as direct objects; these are interpreted as directly affected by their subject arguments. In the (b) examples the experiencers are indirect objects, and are not directly affected by the subjects.

(13) a. Los perros LO molestan siempre que llega ebrio.

'The dogs harass HIM (DO) every time he comes home drunk.' (Treviño 1990 (50b))

b. Los perros LE molestan (* siempre que llega ebrio).

'The dogs bother HIM (IO) (* every time he comes home drunk).' (Ibid. (51b))

(14) a. Los payasos LOS divertieron con los trucos.

'The clowns amuse THEM (DO) with tricks.' (Ibid. (50c))

b. Los payasos LES divertieron (* con los trucos).

'THEY (IO) are amused by clowns (* with tricks).' (Ibid. (51c))

Inasmuch as it is desirable to have a single explanation for what appears to be a similar phenomenon, the favored account of the causative facts should be extendible to psych-predicates as well. To the extent that psych-predicates are to be analyzed as simple predicates, the analysis of the causee alternations should not be tied to the their complex predicate status.[6]

3. Proto-properties and relational alternations

The preceding discussion presented three data behaviors with respect to causee encoding:

(15) a. Languages exhibit both DO/IO and OBJ/OBL alternations.

b. Some languages exhibit a three-way alternation (DO/IO/OBL).

c. The semantic/relational alternations in causatives are often similar to semantic/relational alternations in non-causative constructions.

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[6] Complex predicate accounts of psych-predicates have been proposed by Postal (1970), Baker (1988), and Pesetsky (1995), among others. Austin (1993) formulates an LFG complex predicate linking account for both applied predicates and causatives. All of these accounts necessarily involve some notion of zero morphology, and therefore, a certain degree of abstraction. The proto-property approach presented in the next section makes an abstract complex predicate analysis of psych-predicates unnecessary.

Additionally, there appear to be two conflicting factors that go into the encoding of causees; in some cases the transitivity of the base predicate appears to play a role, while in other cases the degree of affectedness of the causee argument is more important. In what follows we develop an account that addresses all of these issues based on Dowty's (1991) proto-property proposal.

3.1. A proto-property account

Building on Ladusaw and Dowty (1988), Dowty (1991) develops a proposal where thematic roles are analyzed as constellations of particular properties (PROTO-PROPERTIES) which correlate with grammatical relations. Within the typology of approaches addressing the syntactic realization of arguments presented in Levin and Rappaport Hovav (to appear), the proto-property account is classified as belonging to a class in which arguments are not assumed to be distinguishable in terms of atomic semantic roles labels and in which MEDIATED MAPPING obtains: the mapping is mediated, rather than direct, in their terms, because constellations of properties associated with two basic sorts of arguments, PROTO-AGENT and PROTO-PATIENT, are used to calculate argument realization, rather than specific semantic properties directly determining such realizations. Dowty suggests the following proto-properties which when entailed by a predicate, contribute to an argument's status as PROTO-AGENT or PROTO-PATIENT:

(16) PROTO-AGENT PROPERTIES

- volitional involvement in event or state
- sentience
- causing an event or change of state in another participant
- movement (relative to position of another participant)
- exists independently of the event named by the verb

PROTO-PATIENT PROPERTIES

• undergoes change of state

• incremental theme

• causally affected participant

• stationary (relative to another participant)

• does not exist independently of the event, or not at all .

Dowty proposes the ARGUMENT SELECTION PRINCIPLE in (17) and its corollary (COROLLARY 2) for expressing conventional correspondences between arguments and their grammatical relation values:

(17) 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. (Dowty 1991, p. 576)

(18) Corollary 2: With a three-place predicate, the nonsubject argument having the greater number of Proto-Patient properties will be lexicalized as the direct object and the nonsubject argument having fewer Proto-Patient properties will be lexicalized as an oblique or prepositional object . (Dowty 1991, p. 576)

The Argument Selection Principle in (17) and its corollary in (18) operate along a SYNTAGMATIC axis; that is, given a set of co-occurring arguments with certain proto-properties, principles (17) and (18) maintain that grammatical relations are conventionally associated with arguments based on their relative sets of proto-properties. We will accordingly refer to this as the SYNTAGMATIC ARGUMENT SELECTION PRINCIPLE.

As mentioned, Dowty's proposal is sensitive to the proto-properties of co-arguments of a single predicate. This restriction to co-arguments accords with standard assumptions regarding locality conditions on grammatical relation assignment. However, causative constructions, consisting of a causative and an embedded predicate, define potentially distinct argument domains. Therefore, the Syntagmatic Argument Selection Principle would seem to be inapplicable to causatives if the causee and causer arguments are in different domains. If, however, as standardly assumed cross-theoretically, complex predicates define single argument domains, then the Syntagmatic Argument Selection Principle can compare the causee and causer arguments as co-arguments within this domain.[7] We will assume that causatives involve complex predicate formation, which creates such single argument domains. We will adopt the representation of complex predicates illustrated in (19). The representation in (19) distinguishes the arguments of the causative and base predicates, permitting us to focus on the proto-properties of arguments relative to each of the contributing predicates as well as to the whole complex predicate. This is for expository reasons only; the reader should bear in mind that we assume that all the arguments are co-arguments of a single, complex predicate, which is the result of a CLAUSE-UNION like operation.[8]

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[7] As far as we know, the main issues addressed here are independent of particular complex predicate formation operations (cf. Aissen 1979, Baker 1988, Rosen 1990, Alsina 1992, 1996, Abeillé, Godard, and Miller 1994, among others).

[8] From a semantic perspective, an important aspect of complex predicate formation is that the causative predicate may impose entailments on arguments of the base predicate. For example, the causative predicate frequently imposes entailments on the causee argument (highest argument) of the base predicate. This can be formalized as in (i), where the second argument (y) of the causative predicate is associated with the relevant entailments (thanks to D. Dowty, p.c., for discussion of these issues):

(i) CAUSE (x, y, λz (PRED (z, ...))

(19) Cause < arg (PRED < arg, arg, ...>)>

Given the preceding assumptions about proto-properties and the representation of causatives, we note that Dowty's Argument Selection Principle is consistent with different relational assignments, depending on the transitivity of the base predicate. Reserving discussion of particular proto-properties until 3.4, it is clear that when the base predicate is intransitive, the argument with the most proto-patient properties is the causee, and is accordingly realized as a DO. This is represented in (20):

(20) SYNTAGMATIC ARGUMENT ENCODING - Intransitive base predicate:

Cause < arg (PRED < arg >) >

most ag. properties	most pt. properties
SUBJ	DO

It should be recalled that the Argument Selection Principle is only operative when there is an object argument, and does not predict the occurrence of the DO in (20). Though strictly speaking, the Argument Selection Principle does not preclude encodings other than DO in this case, we will assume that the DO encoding functions as a default unless some other factor obtains.

In contrast, when the base predicate is transitive, the embedded theme is the argument with the most proto-patient properties and therefore this embedded argument is encoded as the DO, while the causee assumes a different relation (either an IO or an OBL), in accordance with Corollary 2:

(21) SYNTAGMATIC ARGUMENT ENCODING - Transitive base predicate:

Cause <	arg	(PRED <	arg,	arg	>) >
	most ag. properties			most pt. properties	
	SUBJ		IO or OBL	DO	

The Argument Selection Principle, applied in a syntagmatic fashion, essentially derives the effects of the Transitivity Hypothesis: it provides a default where the causee is encoded by different grammatical relations depending on the transitivity of the base predicate.

We have seen that the Transitivity Hypothesis accounts for only a subset of causee encodings: the relative affectedness of the causee also appears to play a crucial role in its relational encoding and motivated the formulation of the Affectedness Hypothesis in 2.1 (9). For example, in Spanish, we have seen that highly affected causees may be encoded as DOs even when the base predicate is transitive. In such instances the embedded theme would, nevertheless, have the most proto-patient properties, and, by Corollary 2, the causee should show up as an IO or OBL. Since Dowty's Argument Selection Principle (and Corollary 2) yield only the effects associated with the Transitivity Hypothesis, something else must account for the full range of causee encodings. The theoretical challenge is whether this can be achieved in a principled manner in accordance with Dowty's basic approach, or whether one must appeal to essentially unrelated and independent devices. In the following section we develop a proposal which crucially appeals to the central assumptions of Dowty's theory.

3.2. The Paradigmatic Selection Principle

We will assume that the Affectedness Hypothesis should be interpreted as reflecting a PARADIGMATIC alternation; that is, the causee argument itself participates in a contrast which we have referred to as degrees of affectedness. This alternation can be construed as corresponding to the number and type of proto-properties associated with the single causee argument of lexically-related causative predicates along a paradigmatic axis.[9] To account for these distributions we propose that there is something very similar to Dowty's Syntagmatic Argument Selection Principle, but with a paradigmatic interpretation: instead of associating the DO relation with the most patient-like argument along a syntagmatic axis, DO is associated with the paradigmatic alternant exhibiting the greatest degree of proto-patienthood. Any alternant which is less proto-patient-like will be encoded with a grammatical relation that is correspondingly lower on the relational hierarchy. Notice that because we are dealing with causee arguments, which will never be more proto-agent like than the matrix agent of the causative predicate, the part of the relational hierarchy that is relevant begins with the DO relation (i.e. DO > IO > OBL). In (22) we state a conservative formulation of the PARADIGMATIC ARGUMENT SELECTION PRINCIPLE, which is designed to address the data examined here.[10]

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[9] By 'lexically-related' we mean that there are separate lexical entries that overlap in most entailments, but differ in the proto-properties under question. In section 3.4 we discuss which proto-properties are involved; in section 3.5 we discuss the structure of these lexical entries in more detail.

[10] In ongoing work we adopt a generalized version of (22), which extends paradigmatic selection to data that involve arguments that alternate with respect to proto-agentivity as well as to alternations exhibited by a larger inventory of grammatical relations and case-marking alternations. The formulation in (22), as well as our views on a more generalized principle, have benefited from discussions with D. Dowty.

(22) PARADIGMATIC ARGUMENT SELECTION PRINCIPLE: If the grammar of a language offers the option of lexicalizing a predicate *P* with more than one possible relational encoding of a non-subject argument α, then the most proto-patient-like alternant of α will be encoded as a DO, and any decrease in proto-patienthood for α will be matched by a relational encoding that is correspondingly lower on the relational hierarchy.

This principle is very similar to Dowty's Argument Selection Principle in (17). Dowty's principle predicts that when two grammatical relations (SUBJ and DO) co-occur syntagmatically, the argument with more proto-patient properties will be realized as the DO. Our Paradigmatic Argument Selection Principle states that when there is a paradigmatic relational contrast and the causee exhibits variable proto-properties, the most proto-typically patient alternant will be the DO, and incremental decreases in proto-patienthood will be matched by relational encodings following the cline inherent in the relational hierarchy. The intuition behind the syntagmatic versus paradigmatic selection strategies is illustrated in (23-24):

(23) SYNTAGMATIC SELECTION

Compares proto-properties of (syntagmatic) co-arguments of a single predicate:

$pred_a$	arg_1	arg_2	arg_3
$pred_b$	arg_1 most proto-agent → SUBJ	arg_2 less proto-patient → IO or OBL	arg_3 most proto-patient → DO
$pred_c$	arg_1	arg_2	arg_3

(24) PARADIGMATIC SELECTION

Compares proto-properties of a single argument in a (paradigmatic) alternation:

$pred_a$	arg_1	arg_2 most proto-patient → DO	arg_3
$pred_b$	arg_1	arg_2 less proto-patient → IO	arg_3
$pred_c$	arg_1	arg_2 least proto-patient → OBL	arg_3

The syntagmatic strategy compares the sets of proto-properties of the arguments of a single predicate, and places them in correspondence with relational encodings. Crucial to Dowty's proposal is that both the sets of proto-properties and the available grammatical relations are pre-determined for any particular predicate. This association convention does not attempt to predict a specific inventory of grammatical relations keyed to specific semantic properties of arguments; only the relative degree of proto-agenthood and proto-patienthood matters. Thus, arguments with very different constellations of semantic properties can be encoded with the same grammatical relation (in different argument structures).

The paradigmatic strategy possesses many similar properties, but instead of comparing co-arguments of a single predicate, it compares the same argument slot, as it shows up in a paradigmatic alternation across lexically-related predicates. Both the existence of a semantic contrast (as instantiated by contrasting sets of proto-properties) and the classes of possible relational encodings are given in particular languages. The Paradigmatic Argument Selection Principle simply matches up the proto-property sets with the inventory of relational encodings.

Again like the syntagmatic strategy, the paradigmatic strategy is relative; it is the relative degree of proto-patienthood attributed to arguments in the same paradigmatic contrast set, rather than specific proto-patient properties that contributes to an argument's variable relational encoding. For concreteness, we will refer to the collection of the semantic properties associated with an argument as the P-PROPERTY SET of that argument. The effect of the Paradigmatic Argument Selection Principle, given three contrasting P-property sets, is illustrated in (25).

(25) PARADIGMATIC ARGUMENT SELECTION

	P-property set A (entailments associated with arg$_{\alpha}$ of pred$_{a}$)	**P-property set B** (entailments associated with arg$_{\alpha}$ of pred$_{b}$)	**P-property set C** (entailments associated with arg$_{\alpha}$ of pred$_{c}$)
Argument α	most proto-patient-like → DO	less proto-patient-like → lower GR (IO)	least proto-patient-like → lowest GR (OBL)

The three P-property sets in (25) represent a three-way paradigmatic semantic contrast (as exhibited by Spanish causatives). The one exhibiting the highest degree of proto-patienthood, is encoded as a DO, since this is the highest available grammatical relation. The decreasing proto-patienthood in remaining sets corresponds to a relational encoding successively lower on the relational hierarchy.

To summarize, we have posited two interacting strategies which account for the relational encoding of the causee. If we take the syntagmatic strategy to be the default, the causee in Spanish will be encoded as an IO when the base predicate is transitive, and as a DO when the base predicate is intransitive. Thus, we see why Spanish and many other languages exhibit a transitivity effect. However, when there is a semantic contrast, the Paradigmatic Argument Selection Principle is relevant. We propose, in other words, that these two interacting strategies motivate why the causee's relational encoding appears to be sometimes syntactically and sometimes semantically determined. That is, these two strategies account for apparent conflicts in the criteria for causee encoding that are evident in the Transitivity and Affectedness Hypotheses.

We are now in a position to see how this proto-property approach addresses the three aspects of causee encoding raised at the beginning of this section.. With respect to (15a), i.e., why languages exhibit both DO/IO and OBJ/OBL alternations, it is important to reiterate that our approach, unlike standard Mapping Theories, does not attempt to predict specific grammatical relations from the presence of specific proto-properties. Rather, it presupposes an inventory of grammatical relations and proto-properties associated with the arguments of a predicate, and provides principles for the conventional associations between them. Specifically, a more proto-typical patient argument is encoded higher on the Relational Hierarchy than one with fewer proto-patient properties: in Chicheŵa this yields a contrast between OBJ and OBL, while in Spanish it yields a distinction between DO and IO.[11]

Concerning the second issue, i.e., how a language can have a three-way alternation (15b), we deal with this by distinguishing three degrees of affectedness, as expressed via proto-properties,

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[11] It is not clear that there is any principled account of the choice of the non-DO relation that is used for causee encodings. There are certain language-particular generalizations that are discussed in a number of works (e.g., Comrie 1981, Cole 1983, Baker, 1988, Langacker 1991, Kemmer and Verhagen 1994, and Polinsky 1994, among others); but these accounts do not predict which relation will be chosen for any particular language. This is not to say that the choice of causee encodings is unconstrained; cross-linguistically, they tend to fall within the class of indirect objects and agentive obliques. However, within this domain, the choice appears to be made on a language-specific basis. This is very much in the spirit of Dowty's Argument Selection Principle, and we assume that the language must supply the inventory of encodings within which both the syntagmatic and paradigmatic strategies must work.

and by matching these P-property sets with three relational encoding according to the Paradigmatic Argument Selection Principle.[12]

Turning now to the third problem, i.e., how to unify the account of causee alternations with the DO/IO alternations found in psych-predicate constructions (15c), the proto-property approach also provides the relevant distinctions. Under the assumption that the semantic contrast in these constructions is the result of alternative P-property sets associated with the experiencer argument of these predicates, the alternant with greater proto-patienthood is associated with the relation higher on the Relational Hierarchy.[13] This underscores the relative nature of the selection principles: the proto-properties associated with the DO/IO alternation in causative constructions are different from the proto-patient property that correlates with the DO/IO alternation in psych-predicates. Hence, it would not be possible to provide a unified account for these relational

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[12] Section 3.4 discusses the specific proto-properties involved. A three-way alternation depends on the language making three separate encodings available for argument selection. It should be observed that in principle such three-way contrasts, as well as contrasts involving even larger sets of competitors, are predicted to exist, since all that is necessary for a paradigmatic contrast to occur is that different degrees of proto-patienthood be calculable. We cannot address here why there appear to be limits on the size of contrast sets in natural language which seems to restrict the allowable number of members to 3 or possibly 4.

[13] While Dowty does not discuss psych-predicates of the type found in Spanish, he does discuss semantic and relational alternations found with verbs like *load* (587-592):

(i) a. Mary loaded THE HAY onto the truck. (49a)
    b. Mary loaded the truck WITH HAY. (49b)

He proposes that with these verbs, there are multiple lexical entries, related by a lexical rule; each entry entails different proto-properties for different arguments. Given these multiple entries, the syntagmatic Argument Selectional Principle in (17) can assign DO to the appropriate argument, and there will be no need for a paradigmatic principle. As will be demonstrated below, the postulation of three distinct lexical entries with different P-property sets for their arguments will not obviate the need for positing a paradigmatic strategy for the encoding of causees. If this is so, then it may be that this strategy plays a role in locative alternation phenomena as well.

alternation if relational encodings were keyed to specific semantic properties.

All of these cases are unified under the following generalization: related predicates may have alternative P-property sets, yielding a semantic contrast in terms of degrees of proto-patienthood. This corresponds to different relational encodings, mediated by a subportion of the Relational Hierarchy. Alternative P-property sets may be associated with simple or underived predicates, such as Spanish psych-verbs, or with derived or complex predicates, such as causative constructions. Under this view, causatives do not have any special status with respect to semantic and relational alternation.

To summarize, we have employed Dowty's proto-properties in the domain of causee encoding. We have seen that the syntagmatic application of the Argument Selection Principle yields the standard transitivity-based facts. By interpreting Dowty's Argument Selection Principle in a paradigmatic manner, we also derive relational encodings that correspond to affectedness contrasts. The proto-property approach provides a vocabulary that permits at least a three-way semantic contrast. By matching a cline in proto-patienthood with a portion of the Relational Hierarchy, we can account for the apparent iconicity between degrees of affectedness and relational encodings. This approach also provides a way to express parallelisms between causatives and other construction types.

3.3. Previous Accounts

The syntagmatic and paradigmatic strategies account for transitivity and affectedness based effects by appealing to the semantic properties of arguments. This contrasts with most generative proposals which are predominantly syntactic and designed to derive only transitivity-based effects (e.g. Perlmutter and Postal 1974, Aissen and Perlmutter 1976/1983, Gibson and Raposo

1986, and Davies and Rosen 1988, among others). In this section we briefly review two approaches that directly address semantic contrasts, while being responsive to transitivity-based effects as well: these are the proposals put forward in Comrie (1981) and Cole (1983). It is worth noting that the core insights of these works have been, for the most part, overlooked in subsequent attempts to formalize the distribution evident in causee encoding. Our approach represents, in some respects, a refinement of these previous proposals as well as a theoretical interpretation of them within an appropriately modified proto-property framework. In fact, as will be further detailed in this section and elsewhere in the paper, the proto-property proposal which results from examining semantic aspects of causee encoding encourages one to investigate several new directions of inquiry and permits one to address them in principled ways.

Comrie (1981) proposes two distinct hierarchies to account for the competing strategies exhibited in causee encoding. To handle transitivity effects, he appeals to the standard relational hierarchy: SUBJ > DO > IO > OBL (cf. 8). He proposes that the causee argument assumes the next available grammatical relation on the relational hierarchy. That is, if the base predicate is intransitive, the causee assumes the DO relation; if the base predicate is transitive, the DO relation is already taken by the embedded patient, and the causee assumes the next available relation, namely IO.

To handle the encoding effects that we have characterized in terms of affectedness, Comrie assumes the DEGREE OF CONTROL HIERARCHY in (26), formulated in terms of case-marking:[14]

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[14] Comrie notes that the Control Hierarchy in (26) is essentially the inverse of the Relational Hierarchy. Hence, whereas he characterizes causee arguments in terms of DEGREE OF CONTROL, we characterize them in terms of the inverse notion DEGREE OF AFFECTEDNESS or DEGREE OF PROTO-PATIENTIVITY. As far as we can tell, this difference is notational.

(26) DEGREE OF CONTROL: Instrumental > Dative > Accusative (Comrie 1981, p. 174)

The intuition behind this hierarchy is that the particular case markings correspond to proto-typical passive agents, experiencers, and direct objects respectively. The degree of control exhibited by each of these argument types decreases as one moves rightward in the hierarchy. Causee encoding, accordingly, reflects the degree of control assumed to be exercised by the causee: instrumental causees retain the most control, accusative causees the least control, and dative causees an intermediate degree of control. While Comrie proposes that transitivity and semantic encoding effects should be mediated by different hierarchies (the relational and control hierarchies), he observes that the transitivity-based effects may be relatable to the control hierarchy. In particular, he speculates that because transitive subjects typically bear a greater degree of control than intransitive subjects, the former are frequently encoded as IOs, whereas the latter are frequently encoded as DOs. In a sense, then, Comrie tries to relate the different effects attributed to the two hierarchies.

Cole (1983) proposes a similar account where degree of control is construed as degree of agency. Like Comrie, Cole elaborates on the relationship between the semantically driven causee encoding and the transitivity effects. And like Comrie he notes that transitive subjects typically exhibit a greater degree of agency than intransitive subjects. To account for this as well as for deviations from this pattern, he hypothesizes that transitivity-based causee encoding represents a grammaticization of a primary semantic strategy. Unlike Comrie, Cole does not posit a case-hierarchy, but speculates suggestively on the relationship between grammatical relations and degrees of agency.

As is evident, the core intuition guiding our approach resembles the semantic intuitions informing these early accounts, although we formulate the basic distinctions somewhat differently. We formalize the notion degree of control/agency in terms of the inverse scale of degree of affectedness/proto-patientivity (cf. footnote 14). Nevertheless, our paradigmatic strategy corresponds to the effects achieved by Comrie's control hierarchy. On the other hand, there are several respects in which our account differs from those described above.

The semantic considerations central to these accounts have led us to develop what we believe is a principled augmentation of Dowty's proto-role proposal, in terms of paradigmatic selection. The moves required within a proto-property approach which recognizes the central insights of Comrie and Cole yield a theory of argument selection which differs from Dowty's original proposal and which extends to the analysis of data other than those in Dowty (1991); i.e., the causee encodings and related phenomena investigated here. In addition, it suggests the reanalysis of certain phenomena already analyzed in Dowty (1991), such as locative alternation (cf. footnote 12). As a result, we have located cross-linguistic causee encoding variation within an explicit and general theoretical framework that finds motivation in other areas of argument selection.

While the accounts of Comrie and Cole also connect causee encoding with the usual semantics associated with particular case-markers or grammatical relations, they leave quite vague the specifics of the general framework within which argument encoding occurs. One instance where an advantage in using a variant of Dowty's proto-role framework becomes apparent is discussed in section 3.5, where we consider restrictions on causee encodings imposed by certain base predicates. These restrictions are a consequence of the particular proto-properties associated with these base predicates. Our approach also differs from Cole's in that we do not claim that transitivity-based encodings are the result of a grammaticization process. Rather, we view the transitivity effects as the result of the Syntagmatic Argument Selection Principle, which, as Dowty argues compellingly, is universally available for argument encoding; in this respect, transitivity-based causee encoding does not represent anything out of the ordinary. While our approach is not, strictly speaking, incompatible with Cole's grammaticization hypothesis, we remain neutral on the issue, pending the presentation of diachronic evidence for such grammaticization.

Finally, by proposing competing syntagmatic and paradigmatic principles, our approach offers a new manner to view some of the well-known cross-linguistic variation in the domain of causee encoding. In section 4 we discuss how the competition between these two principles is resolved differently for different languages.

3.4. The Notion of 'Affectedness'

In several instances we have made reference to DEGREES OF AFFECTEDNESS, which correspond inversely to Comrie's DEGREES OF CONTROL and Cole's DEGREES OF AGENCY; this section fleshes out our proto-property approach by providing an interpretation of affectedness in terms of specific proto-properties.[15] With respect to causee encodings, we will see that the variable presence of two proto-properties, CAUSALLY AFFECTED and VOLITIONAL, contribute to the degree of proto-patientivity of a causee argument, and drive the application of the Paradigmatic Argument Selection Principle. With respect to psych-predicate alternations, the toggling of the proto-patient property CHANGE OF STATE yields different degrees of proto-

[15] Claims concerning "affectedness" as a explanation for various grammatical phenomena have a long history in generative linguistics. (see Jackendoff 1996 for a recent appeal to this notion and Levin and Rappaport-Hovav, to appear, for references.)

patienthood. Hence, while no single proto-property unifies causee encodings with the realizations of psych-predicate experiencers, the proto-type category PROTO-PATIENT makes the desired connection.

With respect to causatives, Saksena (1982) and Alsina (1992) propose that there is an affectedness contrast between OBJ causees (our DO and IO causees) and OBL causees. In effect, they claim that OBJ causees are directly affected by the causative predicate, while OBL causees are not. We have seen that OBL causees in Spanish are purely agentive, and not directly affected by the causative predicate. The relevant contrast can be represented through the presence or absence of Dowty's proto-patient property CAUSALLY AFFECTED. Along with these researchers, we assume that OBL causees lack this proto-patient property, while DO and IO causees possess it. It should be noted that the proto-patient property Causally Affected, as employed here, fails to distinguish between DO and IO causees. We address this issue in what follows.

As discussed previously, several researchers have noted semantic/pragmatic factors associated with DO/IO alternations in Spanish (e.g. Roldán 1972, García 1975, Strozer 1976, and Finnemann 1982). Characteristic of these works is the idea that animacy and volitionality are relevant for these relational contrasts.

Finnemann (1982) examines 526 tokens of causative constructions involving the causative verb *hacer*. He classifies DO versus IO causees on the basis of the transitivity of the base predicate, and the referent of the causee (i.e., whether the causee is animate, human, masculine, or feminine). His findings are summarized in (27).

(27) There are two primary variables that determine the choice between DO and IO causees:

a. Transitivity is an important factor. In the corpus, causees that are subjects of embedded intransitives are encoded as a DOs in 71% of the cases. Causees that are subjects of transitives are encoded as IOs in 76% of the cases. Transitivity plays a role independently of the referent of the causee.

b. The referent of the causee also is a factor. The likelihood of being encoded as a DO decreases along the following, rather standard, animacy hierarchy:

inanimate > animate, non-human > human, feminine > human, masculine

We propose that the role of transitivity in (27a) reflects the syntagmatic dimension of argument selection, while the observation in (27b) represents the paradigmatic axis. We see that the human end of the animacy hierarchy in (27b) is compatible with a number of proto-agent properties listed in (16). In particular, humans are most likely to be volitional, sentient, and they are capable of effecting a change of state. While, it is possible that all of these proto-agent properties may play a role in distinguishing DO and IO causees, the proto-agent property VOLITIONAL appears to have special status. A number of researchers have proposed that Spanish IOs are more active participants than DOs (García 1975 and Strozer 1976). Clearly degree of participation is related to volitionality.[16]

We can see the role of volitionality in Strozer's examples, repeated in (28).

[16] Strozer relates degree of participation and volitionality inversely to degree of force from the causer to the causee. This is very reminiscent of Talmy's (1988) force dynamics phenomena. We assume that volitionality is consistent with the notions of CONTROL or AGENTIVITY, as employed in Comrie (1981), Cole (1983), Authier and Reed (1991), and Kozinsky and Polinsky (1993), among others. Kozinsky and Polinsky (p. 202) characterize a participant's control as: "the ability to begin/continue/terminate a situation".

(28) a. LA/??LE hice [probarlo] a la fuerza.

'I made HER (DO/??IO) [try/taste it] by force.'

b. LE/??LA hice [probarlo] diciéndole que era riquísimo.

'I had HER (IO/??DO) [try/taste it] by telling her it was delicious.'

In (28a) the causee has no choice but to taste the food, and the DO encoding is clearly preferred; in (28b) the causee is coaxed into trying the food, but retains her volitionality, and may choose not to try it. In this latter case the IO encoding is preferred.

Putting all of this together, we propose that the three degrees of affectedness in Spanish causatives reflects the proto-properties in (29):

(29)	P-property set A	P-property set B	P-property set C
Proto-patient properties:	Causally Affected	Causally Affected	
Proto-agent properties:		Volitional	Volitional
	→ higher GR (e.g. DO)	→ lower GR (e.g. IO)	→ lowest GR (e.g. OBL)

In (29) we see that P-property set A contains the proto-patient property Causally Affected, and no proto-agent properties. Thus, set A represents a more proto-typical patient than P-property set B, which while also containing Causally Affected, additionally contains the proto-agent property Volitional. Finally, P-property set C contains no proto-patient properties, but bears the proto-agent property Volitional. In computing the three degrees of proto-patienthood, we depart slightly from Dowty (1991), and adopt a convention that he proposed during the 1993 LSA Linguistic Institute. Crucial to our account is that P-property set A in (29) is more proto-patient-like than P-property set B. Under Dowty's (1991) approach, these two sets would be equally proto-patient-like, since they have the same number of proto-patient properties (i.e.

they both have the property Causally Affected). However, P-property sets A and B can be distinguished by virtue of the fact that set B also contains the proto-agent property Volitional. Thus, when two sets bear the same number of proto-patient properties, a set with additional proto-agent properties will be less proto-patient-like than a set without proto-agent properties. In other words, the most prototypically patient argument has the greatest number of proto-patient properties, and the fewest number of proto-agent properties.[17]

Having seen how paradigmatic selection accounts for certain causative alternations, we can now explore how this kind of analysis can be extended to a non-causative construction, such as psych-predicates in Spanish. For Spanish psych-predicates it is not clear that either the proto-agent property Volitional nor the proto-patient property Causally Affected are relevant in distinguishing the DO experiencer from the IO experiencer. Consider again the examples in (13), repeated here in (30). In neither the (a) nor the (b) example can the experiencer be said to be volitionally involved in the event. Furthermore, we see that while the experiencer is directly affected by the dogs in the (a) example, it is also affected, albeit indirectly, by the dogs in the (b) example.

(30) a. Los perros LO molestan siempre que llega ebrio.

'The dogs harass HIM (DO) every time he comes home drunk.'

b. Los perros LE molestan (* siempre que llega ebrio).

'The dogs bother HIM (IO) (*every time he comes home drunk).'

Dowty (1991:580) develops a proposal for a class of psych predicates, following an insight

[17] Dowty's (1993) proposal implements this by assuming a positive value for the number of proto-agent properties and a negative value for the number of proto-patient properties. The sum of these results in the degree of proto-agentivity/patientivity.

attributed to Croft (1986). Under this proposal, psych predicates with stimulus subjects, as is the case in (30), have either an inchoative or a stative interpretation. On the inchoative interpretation Dowty proposes that the experiencer undergoes a change of state. This is exemplified in (30a). In contrast, the experiencer in examples with a stative interpretation does not undergo a change of state. Thus, in Dowty's system, this contrast follows from the presence versus the absence of the proto-patient property CHANGE OF STATE associated with the experiencer argument.[18] This type of analysis applies specifically to the Spanish data in (30) in the following way: in (30a), the experiencer is construable as undergoing a change of state by virtue of the dogs' harassment. In (30b), on the other hand, the experiencer is assumed to have a predilection to be bothered by dogs and change of state is irrelevant. This semantic contrast can be implemented by positing two related psych-predicates with a paradigmatic alternation in the number of proto-patient properties associated with the experiencer argument: in (30a), the experiencer has Change of State in its P-property set, and is therefore more proto-patient like than the experiencer in (30b), whose set lacks this proto-patient property. According to the Paradigmatic Argument Selection Principle, these contrasting P-property sets correspond to the DO/IO relational encodings.

Thus, while Spanish psych-predicates do not alternate with respect to the same set of proto-patient and proto-agent properties found in causatives (i.e. neither Volitional nor Causally Affected), there is, nevertheless, a contrast in proto-patienthood in the direction predicted by the Paradigmatic Argument Selection Principle in (22). Thus, proto-patient, being a proto-type

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[18] Dowty proposes that Change of State is relevant for the inchoative/stative contrast in English psych-predicates. The Spanish data in (30) are of particular interest, because there appears to be a relational alternation that correlates with different P-property sets. These data are, therefore, interpretable as further support for Dowty's proposal.

category, provides the means to unify the DO/IO alternations found both in conjunction with causee encoding and psych-predicate experiencer encoding.

3.5. The Interaction of Syntagmatic and Paradigmatic Selection

In this section we discuss in greater detail the mechanics of syntagmatic and paradigmatic alternations and how they interact with semantic/pragmatic aspects of the base predicate. In addition, we discuss how syntagmatic and paradigmatic selection principles can interact to yield various interpretations of causee arguments.

Dowty conceives of the Syntagmatic Argument Selection Principle as a static generalization over the lexicon. That is, he assumes that lexical entries contain, among other things, the grammatical relations of each argument and a list of the entailed proto-properties. On this view, the Argument Selection Principle is a well-formedness condition over lexical entries, and does not provide a dynamic, on-line linking mechanism that predicts grammatical relations from semantic entailments. Similarly, our formulation of the Paradigmatic Argument Selection Principle represents a well-formedness condition on related lexical items. Thus, both selection principles provide constraints on the content of lexical entries, and thereby provide insight into the organization of the lexicon. In what follows we show in greater detail how these principles operate with respect to the data presented above.

First, consider the case of inchoative versus stative psych-predicates. We argued above that these are distinguished by the presence or absence of the proto-patient property CHANGE OF STATE with respect to the experiencer argument. Our implementation of this involves two related lexical items that differ only in this entailment, and in the relational encoding of the experiencer argument (arg_2), e.g.:

(31)	a.	*molestar*$_a$	<arg$_1$,	arg$_2$>
			Causer (PA)	Sentient (PA)
			SUBJ	IO
	b.	*molestar*$_b$	<arg$_1$,	arg$_2$>
			Causer (PA)	Sentient (PA)
				Change of state (PP)
			SUBJ	DO

(PA = ‘Proto-agent property; PP = ‘Proto-patient property’)

Because these lexical entries differ minimally, we can identify the difference between (31a-b) as a PARADIGMATIC CONTRAST, which must be licensed by the Paradigmatic Argument Selection Principle.[19] Since the lexical entries specify the relational encodings, the Syntagmatic and Paradigmatic Argument Selection Principles are taken to be well-formedness conditions over these items. Neither lexical entry violates the syntagmatic principle. Furthermore, the two lexical items are in accordance with the paradigmatic principle, as the more proto-agentive arg$_2$ is associated with the IO relation, which is lower on the Relational Hierarchy than the DO arg$_2$ of *molestar*$_b$.

The case of causee alternations and encodings are more complex. First, since causative constructions involve complex predicates, the application of the selection principles must take the both entailments of the causative predicates and the base predicates into account. Thus, the selection principles must be viewed as well-formedness conditions on the output of complex-predicate formation. Secondly, the interaction between the syntagmatic and paradigmatic principles is also more complex with causee encoding. We saw above that both principles are

[19] We do not specify the precise lexical rules responsible for relating the predicates which share the relevant argument, since they are not relevant for the issues at hand. The crucial point is simply that there be multiple related lexical entries and that one of their arguments participates in a PARADIGMATIC CONTRAST with respect to proto-properties.

met in the case of psych-predicates. We will show that the paradigmatic strategy can sometimes take precedence over the syntagmatic one, yielding surface violations of the syntagmatic principle. We propose below a lexical account in which we posit three independent and related lexical items that participate in a rule of complex predicate formation.[20]

In section 3.4 we argued that the three-way alternation with respect to Spanish causee encoding corresponds to a semantic contrast in terms of the proto-properties CAUSALLY AFFECTED and VOLITIONAL. In (32) we implement this using lexically-related causative predicates:

(32)	a.	*hacer*$_a$	<arg$_{1,}$	Pred	<arg$_2$,	... >>
			Causer (PA)		Causally Affected (PP)	
					restriction: non-volitional	
			SUBJ		DO ~ IO	
	b.	*hacer*$_b$	<arg$_{1,}$	Pred	<arg$_2$,	... >>
			Causer (PA)		Causally Affected (PP)	
					Volitional (PA)	
			SUBJ		DO ~ IO	
	c.	*hacer*$_c$	<arg$_{1,}$	Pred	<arg$_2$,	... >>
			Causer (PA)		restriction: non-causally affected	
			SUBJ		DO ~ IO ~ OBL	

In each of these lexical items, the causative predicate selects a causer argument and a caused

[20] A reviewer points out that these complex predicates are more appropriately analyzed CONSTRUCTIONALLY (cf. Fillmore, Kay, and O'Connor 1988, Goldberg 1995, Fillmore and Kay 1993, and Davis 1997). This is because the selection principles in a language like Spanish apply to the output of causativization, and this output is associated with two independent syntactic words, with their own lexical representations. However, if it is possible for a single lexical representation to be expressed by several independent syntactic words, then it may be possible to formulate some variant of a lexical account (see Frank 1996 and Ackerman and Webelhuth 1998 for proposals along these lines). In this connection it is appropriate to mention that lexicalist proposals bolstered by certain assumptions may render them empirically indistinguishable from certain constructional accounts. (see Levin and Rappaport Hovav, to appear, for an interesting discussion.)

event. Furthermore, it places restrictions on the proto-property inventory of the first argument of the base predicate (i.e., the causee argument). This is clearly where there is a need to posit complex-predicate formation; the causative predicate treats the embedded argument as one of its own arguments (cf. the discussion in footnote 8). Note that the causative predicates impose two types of restrictions: positive and negative. The positive restrictions simply add the entailment of a particular proto-property; the negative restrictions state that the embedded argument may not bear a particular proto-property. Below we see how this predicts certain restrictions regarding the combination of particular predicates in causative constructions. Finally, note that the causee argument is specified as allowing a range of relational encodings. The choice between these will be determined by the selection principles, as discussed below.

Once these causative predicates have merged with a base predicate (which brings its own proto-property entailments), the causee argument will exhibit a three-way contrast in degree of proto-patienthood. This defines a paradigmatic contrast and alternative DO, IO, and OBL relational encodings are in accord with the Paradigmatic Argument Selection Principle. We illustrate the application of paradigmatic selection in (33):

(33) a. La hice [probarlo] a la fuerza. (*hacer*$_a$)
‘I made her (DO) [try/taste it] by force.’

	I	made	[HER	try	IT]
P-properties:	Causer		Causally Affected (PP) Sentient (PA)		various PPs
Relations:	SUBJ		DO		GR_x

b. Le hice [probarlo] diciéndole que era riquísimo. (*hacer*$_b$)
‘I had her (IO) [try/taste it] by telling her it was delicious.’

	I	had	[HER	try	IT]
P-properties:	Causer		Causally Affected (PP) Volitional (PA) Sentient (PA)		various PPs
Relations:	SUBJ		IO		DO

c. Hicieron [diseñar estas casas por los mejores arquitectos]. (*hacer*$_c$)
‘They had [these houses designed by the best architects (OBL)].’

	THEY	had	[THE BEST ARCHITECTS	design	THE HOUSE]
P-properties:	Causer		Volitional (PA)		various PPs
Relations:	SUBJ		OBL		DO

(33a) represents the case where the causee is most patient-like; according to the Paradigmatic Selection Principle, this will be encoded as a DO. The causee in (33b) is less prototypically patient-like, and is encoded as an IO. In (33c) the causee bears no proto-patient properties at all, and is encoded as an OBL. Notice that the encoding in (33a) would be unexpected under the Syntagmatic Argument Selection Principle; the causee is less proto-patientive than the embedded patient, nevertheless, the causee is encoded as a DO.[21] Hence, this is an instance in which the Paradigmatic Selection Principle takes precedence over part of the syntagmatic strategy.[22]

[21] The patients of the embedded predicates in (33) will also be encoded as DOs, unless this conflicts with the paradigmatic pattern (i.e., when the causee is encoded as a DO, as in 33a). In this case, different languages adjust for the conflict between the causee and the embedded theme in different ways. We have seen that Chichewâ treats the theme as a second object (OBJθ in LFG terms) and that Spanish treats it as a DO of the embedded verb, but not of the matrix verb (e.g., it is a Chômeur in the Union stratum in RG terms; see Gibson and Raposo 1986 and Moore 1990). These encodings of the embedded theme do not necessarily follow from the syntagmatic Argument Selection Principle, and may well be a purely syntactic phenomenon (e.g. a stratal/functional uniqueness effect).

[22] While the paradigmatic strategy takes precedence over syntagmatic selection with respect to the causee argument in (33a), it still applies to the matrix subject; thus, both strategies are involved in this example. Both (33b) and (33c) are consistent with the syntagmatic strategy, as the embedded themes win out as the most prototypical patients, and is encoded as a DO. The

When the syntagmatic strategy applies to the causee argument, the distinction between the three causative predicates is neutralized. To see how this works, we need to consider both intransitive and transitive base predicates. First consider an (unergative) intransitive base predicate, combined with *hacer*$_a$:

(34) Pedro lo hizo [llorar]. (*hacer*$_a$)
'Pedro made him (DO) cry.'

	PEDRO	made	[HIM	cry]
P-properties:	Causer (PA)		Causally Affected (PP) Sentient (PA)	
Relations:	SUBJ		DO	

This encoding is compatible with the Syntagmatic Argument Selection Principle, as the causer is the proto-agent and the causee the proto-patient. Again, while either the DO or IO encoding is compatible with the syntagmatic principle, we assume that DO is the default case.

A complication arises when a base predicate combines with *hacer*$_b$ or *hacer*$_c$. This problem was pointed out with respect to Finnish causatives in Davis (1997). As seen in (35), if the base predicate's argument bears at least one proto-agent property it competes with the causer argument for proto-agent:[23]

paradigmatic strategy is needed here to ensure that the more prototypical patient along the paradigmatic axis (i.e. the causee in (33b) as opposed to (33c)) is encoded higher on the Relational Hierarchy.

[23] This complication arises under Dowty's system for computing proto-roles, whereby proto-agent and proto-patient properties contribute positive and negative values respectively (cf. footnote 16). Under this system, both the causer and causee in (36) would have equal claim to proto-agenthood if the main predicate is *hacer*$_b$ or *hacer*$_c$ (a score of 1). Even if we adopt a different convention, e.g., one where the causee is a proto-patient by virtue of the proto-patient role Causally Affected, the complication arises in the case of *hacer*$_c$.

(36) Pedro lo hizo [llorar]. (*hacer*$_{b\ or\ c}$)
‘Pedro made him (DO) cry.’

	PEDRO	made	[HIM	cry]
P-properties:	Causer (PA)		(Causally Affected (PP)) (Volitional) Sentient (PA)	(parenthesized roles from *hacer*$_b$)
Relations:	SUBJ		DO	

We believe that this requires an additional assumption that is necessitated by applying Dowty’s argument selection principle to complex predicates. In particular, we propose that when two argument structures merge through complex predicate formation, only the proto-agent of the main predicate can be associated with the SUBJ relation. We see this in (36), where the matrix argument is the SUBJ, despite the fact that it bears the same number of proto-agent properties as the embedded argument. We suspect that this assumption will be independently required for other types of complex-predicate formation as well (e.g., serial verbs, restructuring, resultatives, etc.).[24]

Turning to embedded transitives, we see that the syntagmatic principle correctly picks out the causee argument as neither the proto-agent nor the proto-patient. The causer argument typically will bear the most proto-agent properties (modulo the discussion above), while the embedded theme will bear the most proto-patient properties. Thus, by Corollary 2 of the Syntagmatic Argument Selection Principle, the causee must be encoded as something other than a SUBJ or

[24] Davis (1997, p. 106), introduces “limited semantic decomposition” for causatives in order to account for the subject status of the causer argument; this is essentially equivalent to our solution. Davies and Rosen (1988, pp. 83-84) discuss a similar issue with respect to *faire-par* causatives in Italian; under their mono-clausal, RG approach, the fact that the causer, and not the causee, bears the SUBJ relation is a consequence of the RG MOTIVATED CHÔMAGE LAW. Finally, Levin and Rappaport Hovav (1995, p. 135) propose a special linking rule for causatives, namely, the IMMEDIATE CAUSE linking rule.

DO:

(37) Pedro le hizo [comprar el coche]. (*hacer*$_{a,\ b,\ or\ c}$)
‘Pedro made him (IO) buy the car.’

	PEDRO	made	[HIM	buy	THE CAR]
P-properties:	Causer (PA)		(Causally Affected (PP)) (Volitional (PA)) Sentient (PA)		various PPs
Relations:	SUBJ		IO		DO

We can see in (36-37) that the syntagmatic strategy neutralizes the semantic distinction associated with each of the three causative predicates. That is, given the transitivity-based encoding that this strategy produces, the grammatical relation that the causee bears does not give any indication of which predicate is involved. Accordingly, such sentences could be ambiguous between the semantics associated with the three causative predicates.

This ambiguity can be seen in French data discussed in Reed (1992) and Authier and Reed (1991). As illustrated in (38), French, like Spanish, exhibits the transitivity effect for causees.

(38) a. Je ne peux pas LUI faire lâcher l’école. (Reed 1992 (1b))
‘I can’t make/have/get HER (IO) to quit school.’ direct or indirect causation

b. Ça L’a fait récriminer de plus belle. (Authier and Reed 1991 (2b))
‘That made HIM (DO) complain even more.’ direct or indirect causation

Under our account, these encodings follow from an application of the Syntagmatic Argument Selection Principle; in (38a) the embedded theme is the argument with the most proto-patient properties, and is accordingly encoded as a DO. Since the causee has relatively fewer proto-patient properties, it is encoded as an IO, in accordance with Corollary 2. In (38b), the embedded causee is the sole non-subject argument. It bears the most proto-patient properties, and is encoded as the DO.

Reed (1992) and Authier and Reed (1991) note that the examples in (38) are ambiguous between direct and indirect causation; a similar point is made for Spanish by Strozer (1976). We have proposed that direct causation correlates with a causee lacking the proto-agent property Volitional, while indirect causation correlates with the presence of this property. This semantic contrast is encoded as entailments of *hacer*$_a$ and *hacer*$_b$, respectively. However, we saw above that the syntagmatic strategy neutralizes this contrast, as either predicate, when subjected to the syntagmatic strategy produces the transitivity-based encodings.

Consider the examples in (39), which, according to Authier and Reed, are not ambiguous.

(39)	a.	Je peux pas LA faire lâcher l'école, ...	(Reed 1992 (1c))
		'I can't make HER (DO) to quit school...'	unexpected DO - direct causation only
	b.	Ça LUI a fait récriminer de plus belle.	(Authier and Reed 1991 (2c))
		'That made HIM (IO) complain even more.'	unexpected IO - indirect causation only

They characterize the examples in (39) as containing unexpected DO and IO causees respectively.

If causee encoding were only determined by the syntagmatic Argument Selection Principle, these relational encodings are clearly unexpected. However, we propose that these encodings and the lack of ambiguity follow from an application of the Paradigmatic Argument Selection Principle. In (39a) there is unambiguous direct causation because the DO causee correlates with the absence of the proto-agent property Volitional; in (39b) there is unambiguous indirect causation because the IO corresponds to a volitional causee.

In this way we can account for some of the putative pragmatic effects with respect to the volitionality of the causee. Reed (1992) argues that the direct/indirect causation contrast in the above examples derives from pragmatic factors associated with the caused event.[25] Furthermore, Holisky (1987) proposes that animacy carries the pragmatic inference of volitionality. Thus, one might conclude that direct causation is the result of the lack the volitional implicature when the causee is animate, while indirect causation obtains when this implicature is present. However, we propose that the presence or absence of the proto-agent property Volitional is determined by the causative predicate. In particular, $hacer_a$ entails the lack of volitionality, while $hacer_b$ entails a volitional causee. Thus, even if an embedded predicate presents an animate argument, yielding an implicature of volitionality, the presence of this implicature is incompatible with the non-volitional entailment of $hacer_a$, resulting a non-volitional, sentient causee. In this way, the lack of volitionality in $hacer_a$ constructions appears to involve the cancellation of an implicature; however, under our approach, this is actually the result of the lexical semantics of the causative predicate precluding such an implicature.

To summarize, it appears that a language may employ the syntagmatic strategy, resulting in ambiguity between direct and indirect causation, or it employs the paradigmatic strategy to resolve this ambiguity. In this way, paradigmatic strategy supplants the syntagmatic strategy only when it is necessary to disambiguate.

Finally, the entailments of the causative predicates interact crucially with the entailments associated with certain base predicates, yielding restrictions on the application of the paradigmatic strategy. Since causative constructions involve complex predicates, we might

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[25] A somewhat different approach is taken in Reed (1993), where directness vs. indirectness of causation is treated as a conventional implicature associated with the choice of a particular causee case-marking.

expect that the entailments of both predicates would be relevant for determining proto-properties. Here we discuss two cases where the proto-properties of the base predicate play a crucial role in causee encoding.

First, as noted in Zubizarreta (1985), unaccusative base predicates are incompatible with OBL causees. This is illustrated in (40).[26]

(40) a. El jabón hizo resbalar al muchacho. (Moore 1989, (21a))

'The soap made the boy (DO) slip.'

b. * El jabón hizo resbalar. (Ibid. (21b))

'The soap made (someone - unexpressed OBL) slip.'

This fact can be accounted for under the present approach by assuming that the single argument of an unaccusative verb receives proto-patient properties from the unaccusative base predicate, among them Causally Affected. Thus, these base predicates are incompatible with *hacer*$_c$, which entails the lack of this proto-patient property.

Another effect of the base predicate's entailments is noted by Reed (1992) and Authier and Reed (1991). They note that unergatives, but not unaccusatives, exhibit a DO/IO alternation in French causative constructions with intransitive base predicates. This is illustrated in (41).

(41) a. Ça L'/LUI a fait récriminer de plus belle. (Authier and Reed 1991 (2b-c))

'This made HIM (DO/IO) complain even more.'

b. * Ça LUI a fait grossir. (Ibid. (4))

'This made HIM (IO) fatten up.'

In (41b), the argument of the unaccusative verb has no control over the action once it is initiated.

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[26] Recall that the OBL causee in Spanish is generally unexpressed.

This is consistent with a DO encoding, since DO causees are assumed to be non-volitional. However, the IO encoding in (41b) would indicate volitionality, which according to Authier and Reed, conflicts with the entailments of the embedded unaccusative. This account translates directly into our approach. We assume that non-volitionality is generally an entailment of unaccusative predicates; such non-volitionality would be incompatible with the Volitional property entailed by *hacer*$_b$. [27]

4. Causee encodings - a cross-linguistic perspective

A theoretical claim guiding our analysis is that argument encoding may result from a combination of syntagmatic and paradigmatic strategies. One way to view this dichotomy is that these strategies represent two conflicting ways to represent semantic properties of a particular argument. Under the syntagmatic strategy, co-arguments are encoded in a way that makes them distinct from each other in a single argument structure. The paradigmatic strategy, on the other hand, provides a means to overtly encode the variable semantic properties of a single argument. Thus, these two strategies can be viewed as potentially conflicting forces. We have argued that Spanish causatives resolve this conflict in an ambivalent manner; in the default case the syntagmatic strategy wins out, but this can be overridden in order to disambiguate direct and indirect causation. In this light is it instructive to look at causee encoding strategies from a broader, cross-linguistic perspective. In what follows we will briefly discuss causee encoding in

[27] See Dowty (1991, pp. 605-613), for a discussion of the proto-properties associated with unaccusative predicates. Additional cases of entailments of the base predicates contributing to the proto-properties of the causee come from the interaction of ingestive predicates and causativization in South Asian languages (cf. Masica 1976, Saksena 1982, among others), the agentive/nonagentive base predicates in Quechua, Modern Hebrew, and Kannada (Cole 1976, 1983), as well as fluid S-marking languages (cf. the discussion of Chamali in Kozinsky and Polinsky 1993, pp. 203-204).

four languages; what appears to emerge is a continuum from pure paradigmatic to pure syntagmatic strategies.

As illustrated in (42-43), analytic causative constructions in Korean exhibit a three-way relational alternation that is independent of the transitivity of the base predicate. DeSimone (1997) argues that the choice between these encodings is wholly determined by the paradigmatic strategy; that is, the three causee encodings express varying degrees of affectedness, just as the three-way paradigmatic alternation in Spanish does (cf. also Kang 1984, Gerdts 1990, and Park 1994, among others).

(42) Intransitive base predicate - DO/IO/OBL alternation (DeSimone 1997 (33a-c))

Nay-ka	yeca-LUL/-EYKEY/-LO.HAYEKUM	wus-key	ha-yss-ta.
I-NOM	woman-ACC/-DAT/INST	laugh-COMP	cause-PST-DEC

‘I made the woman laugh.’

(43) Transitive base predicate - DO/IO/OBL alternation (DeSimone 1997 (32a-c))

Minca-ka	ai-LUL/-EYKEY/-LO.HAYEKUM	chayk-ul	cwu-key	ha-yss-ta.
Minca-NOM	child-ACC/-DAT/INST	book-ACC	read-COMP	cause-PST-DEC

‘Minca made the child read the book.’

We can view this system as one where the syntagmatic strategy is inoperative in causee encoding, and where paradigmatic strategy is inviolable. Thus, Korean causee encoding represents a pure application of the paradigmatic strategy.

Although Spanish uses a default syntagmatic strategy, it is like Korean in that a three-way paradigmatic alternation is possible with both transitive and intransitive base predicates. Other languages also use both strategies, but place greater restrictions on where the effects of the paradigmatic strategy may obtain. For example, Chicheŵa , as described in Alsina (1992), has a two-way (OBJ/OBL) alternation that is semantically conditioned when the base predicate is transitive, but no alternation when the base predicate is intransitive. This is illustrated in (44-45):

(44) Transitive base predicate - OBJ/OBL alternation (Alsina 1992 (1))

a.	Nûngu	i-na-phík-íts-a	KADZIDZI	maûngu.	
	9-porcupine	9s-ps-cook-CAUS-fv	1A-OWL-OBJ	6-pumpkins-OBJθ .	
	‘The porcupine made the owl cook the pumpkins.’				
b.	Nûngu	i-na-phík-íts-a	maûngu	KWÁ KÁDZĪDZI.	
	9-porcupine	9s-ps-cook-CAUS-fv	6-pumpkins-OBJ	to1A-OWL-OBL	
	‘The porcupine had the pumpkins cooked by the owl.’				

(45) Intransitive base predicate - no OBJ/OBL alternation (Alsina 1992 (2))

a.	Chatsalîra	a-ku-nám-íts-á	MWÃ́NA.	
	1-name	1s-pr-lie-CAUS-fv	1-CHILD-OBJ	
b.	* Chatsalîra	a-ku-nám-íts-á	KWÁ	MWÃ́NA.
	1-name	1s-pr-lie-CAUS-fv	to 1-CHILD-OBL	
	‘Chatsalira is making the child lie.’			

Alsina observes that Chicheŵa requires that at least one of the arguments of the base predicate must be construed as affected.[28] This can be implemented in our system by assuming that the causative predicate in Chicheŵa entails the proto-patient property Causally Affected, but unlike

[28] This restriction, also proposed for Hindi in Saksena (1982), may be a consequence of the Aktionsart of the Chicheŵa causative predicate. Alsina provides tests which demonstrate this predicate is perfective. This raises the issue of the relation between aspect and affectedness in causatives. See Ackerman (1994) and Jackendoff (1996) for discussion of these and related issues.

Spanish, this property is not associated with any particular argument of the base predicate:

(46) *-íts* <arg_{1}, Pred < ... >>
Causer Causally Affected

Given this lexical structure, Causally Affected must be associated with one of the arguments of the base predicate. This, of course, presupposes that particular proto-properties need not be uniquely associated with particular arguments.[29] If associated with the embedded theme, that argument will bear the most proto-patient properties, and the causee, by Corollary 2 of the syntagmatic Argument Selection Principle, will be encoded as an OBL. In contrast, if Causally Affected is associated with the causee argument, it will be encoded as a DO. The alternative encodings of causees are achieved through the Paradigmatic Argument Selection Principle as follows: because the Causally Affected property may be associated with the causee argument or the embedded theme argument, the causee argument participates in a paradigmatic alternation in its degree of proto-patienthood. The more proto-patient like alternant, i.e., the one bearing the Causally Affected property, will be encoded as a DO, with the less patientive variant expressible as an OBL.

Under the assumption that Causally Affected is an entailment of the Chicheŵa causative predicate, it must be associated with an argument. When the base predicate is intransitive, the causee argument must bear this property. As a result, this causee will not participate in a

[29] The floating nature of the Causally Affected proto-property, i.e., its ability to be associated with different arguments of the base predicate, is reminiscent of Jackendoff's (1991) action tier. It is also similar to the alternative linkings proposed under Alsina's (1992) argument-linking approach. In effect, these proposals permit alternative distributions of thematic properties among the arguments of a predicate. Alsina and Joshi (1991) propose that the linking of the causee to different arguments of the base predicate may be the basis of cross-linguistic variation in causee encoding.

paradigmatic alternation, and the DO encoding is the only possibility (as illustrated in 46). The analysis of Causally Affected as a 'floating' entailment of the causative predicate effectively restricts paradigmatic selection to transitive base predicates. In this way, some of the cross-linguistic variation found in the encodings of causee arguments may be reducible to lexical differences exhibited by different causative predicates.

Hungarian displays a restriction on the application of paradigmatic selection that is essentially the converse of Chicheŵa. In this language, as observed in Hetzron (1976), no alternation obtains when the base predicate is transitive (47), but a paradigmatically determined alternation is allowed when the base predicate is from a limited class of intransitives (48):

(47) Transitive base predicate - no OBJ/OBL alternation (Hetzron 1976 (25h))

Kifizettettem A BANKÁRRAL az adósságomat.

pay-CAUS-past-1sg THE BANKER-OBL the debt-1sg.poss-ACC

'I had my debt paid by the banker.'

(48) Intransitive base predicate - OBJ/OBL alternation (Hetzron 1976 (23b) an d (23a))

a. köhögtettem A GYEREKET.

cough-CAUS-past-1sg THE BOY-OBJ

'I induced the boy to cough.'

b. köhögtettem A GYEREKKEL.

cough-CAUS-past-1sg THE BOY-OBL

'I had the boy cough (by asking him to do so).'

The Hungarian pattern can be interpreted as representing a more severe restriction on the application of the paradigmatic strategy than in any of the above languages. Just as Korean exhibited an inviolable paradigmatic strategy, we can say that the syntagmatic strategy is inviolable in Hungarian causatives. This means that the paradigmatic strategy cannot override a syntagmatic encoding when the base predicate is transitive. To do so would involve an OBJ causee representing a surface violation of Corollary 2 of the syntagmatic strategy (because the causee is less proto-patientive than the embedded patient). When the base predicate is intransitive and from a lexically restricted class, however, the causee may alternate between OBJ and OBL based on a semantic contrast in the proto-patient property Causally Affected. Since neither encoding violates the Syntagmatic Argument Selection Principle, paradigmatic selection is free to surface in only these cases.

Finally, consider what would happen if a language was like Chicheŵa, in that the causative predicate entailed a floating Causally Affected proto-property, and like Hungarian, in that the syntagmatic Argument Selection Principle were inviolable. Such a language would exhibit purely syntagmatic encoding. Like Hungarian, no causee alternation would be permitted when the base predicate is transitive, lest a violation of the syntagmatic strategy ensue. Furthermore, the causee would necessarily bear the proto-patient property Causally Affected when the base predicate is intransitive, as this entailed property needs to attach to an argument. Finnish causatives appear to instantiate this arrangement. As seen in (4), repeated as (49), Finnish causees alternate between OBJ and OBL entirely on the basis of the transitivity of the base predicate:

(49) a. Kylmä pakkasilma yski-tt-i HÄN-TÄ.
cold frosty weather cough-CAUS-3SG HIM/HER-OBJ
'The cold frosty weather made him/her cough.'

b. Minä raken-nut-in talon MUURAR-EILLA.

I built-CAUS-1SG house-OBJ MASONS-OBL

'I made the masons build the house.'

To summarize, we see a continuum in causee encodings from purely paradigmatic to purely syntagmatic effects. This distribution is predicted from essentially two parameters: paradigmatic inviolability and syntagmatic inviolability. In addition, the lexical semantics of the causative predicate plays a role: are the proto-properties that are relevant to the paradigmatic alternation associated with the highest argument of the base predicate, or can they be associated with either argument.

There is one well-known causee encoding pattern that appears problematic for our approach. In Chamorro (Gibson 1980, Gibson and Raposo 1986), the causee is encoded as an OBJ, regardless of the transitivity of the base predicate. This is illustrated in (50), where the causee is an object in both cases.

(50) a. Hu na'-kanta SI PEDRO.

1sg CAUS-sing PEDRO-OBJ

'I made Pedro sing.'

b. Ha na'-taitai HÄM i ma'estru ni esti lebblu.

3sg CAUS-read US-OBJ the teacher OBL this book

'The teacher made us read the book.'

The OBJ causee in (50b) is unexpected under the syntagmatic strategy. According to our account, this pattern, which is similar to one the Chicheŵa alternates, should only be possible if there is an alternative causee encoding where the causee takes an IO or OBL relation. In other words, in this language, there is an obligatory violation of the syntagmatic strategy, without any apparent sanction for the OBJ encoding by a paradigmatic semantic contrast.

We speculate that perhaps, the uniform OBJ encoding is the result of an earlier paradigmatic alternation that is now lost, and that the language chose the OBJ causee alternate on analogy with the intransitive pattern.[30] Furthermore, even in Chamorro there are remnants of what might have been an earlier alternation. Sandra Chung (p.c.) has found a small number of causative constructions where the causee is encoded as an OBL with a transitive base predicate, e.g.:

(51) In na'-dulalak i lalahi NI FAMALAO'AN.

1pl CAUS-chase the boys OBL GIRLS

'We made the girls chase the boys.'

Examples such as (51) provide evidence for precisely the paradigmatic alternation expected under our account. However, in the case of Chamorro, there is no evidence of a semantic contrast between the OBJ causee in (49) and the OBL causee in (51). Furthermore, Chung has found only ten examples of OBL causees out of a database of 2200 causatives. Nevertheless, while the pattern in (51) is not robust, it is possible to interpret such examples as residual.

[30] Aside from Chamorro, Choctaw (Davies 1981), Chimwiini (Marantz 1984), and Cebuano (Bell 1976) have been cited as allowing only OBJ causees. One must be careful, however, as what is crucially problematic for our account is that OBJ causees are allowed with embedded transitives, AND there is no alternative encoding. The case of Chicheŵa is instructive in this respect. Baker (1988, section 4.3) distinguishes two dialects of Chicheŵa (A and B); he claims that Chicheŵa A allows only OBL causees when the base predicate is transitive, while Chicheŵa B allows only OBJ causees. However, Alsina (1992), working with Sam Mchombo, notes that Chicheŵa A allows both options, as reported earlier in this paper. Hence, one must be careful to determine whether there may indeed be an alternation, despite the fact that no such alternation has been reported. Polinsky (1994) suggests that the encoding conflict which potentially obtains when a causee is encoded as an OBJ with a transitive base predicate often correlates with an alternative encoding for such causatives.

5. Conclusion

In this paper we have developed an analysis of causee encoding that is responsive to the attested patterns within a single language (Spanish), and an array of commonly considered cross-linguistic variation in this domain. This analysis makes crucial use of certain theoretical concepts and raises the question whether these notions, in some form, need to be present in any adequate account of causee encoding. In particular, the following ingredients are fundamental to our account:

(52) a. A repertoire of semantic proto-properties, rather than atomic θ-roles (Dowty 1991)

b. A Syntagmatic Argument Selection Principle defined in terms of proto-properties (Ibid.)

c. Semantic properties of the the causative and base predicates

d. A Paradigmatic Argument Selection Principle defined in terms of proto-properties

(52a-c) represent an adaptation of Dowty's proposal to the domain of causative constructions; (52d) represents an innovation within Dowty's framework, but one that is very much in the spirit of Dowty's original proposal, and is motivated by various semantic restrictions on causee encoding. Furthermore, our Paradigmatic Argument Selection Principle, like Dowty's syntagmatic principle, represents a well-formedness condition on relationships between proto-properties and grammatical relations. That is, it is a generalization over the organization of certain aspects lexical entries.

The account based on the ingredients in (52) was developed largely on the basis of Spanish data. However, in section 4 we saw that cross-linguistic variation in the domain of causee encoding can be characterized in terms of the following factors:

(53) a. The (in)violability of a particular selection principle

b. Lexical properties associated with the complex predicate

While we surveyed only a small set of languages, we feel that the approach in (53) suggests a research program in which this variation can be explored from a larger, typological perspective, as well as from a close examination of causee alternations within single languages. In particular, we suspect that much of the attested variation in this domain may result from the interaction between the two selection principles and various lexical semantic properties of the complex predicate (cf. the discussion of embedded unaccusatives in 3.5 and the related phenomena pointed out in footnote 26).

Our proposal raises a number of theoretical questions that may form the basis of future research. Given the typology in section 4, what is the space of expected patterns of causee encodings cross-linguistically? To answer this requires a more detailed examination of the types of lexical semantic factors that enter into the equation. On a related note, we have seen that Chamorro runs counter to our expectations, but has a plausible historical account; what other languages exhibit the Chamorro pattern, and how can they be accounted for? Finally, how successfully does our account of causee encoding extend to encoding alternations in other constructions? We have seen that it does extend to psych-predicate alternations - can it be utilized in other relational/semantic contrasts such as locative alternations, etc.? We believe that our approach allows for a new way to view these phenomena in terms of the principled correspondence between subtle semantic distinctions and the relational status of nominals. In conclusion, the present proposal is sufficiently constrained to yield concrete analyses and empirical predictions, while also yielding explicit directions for future inquiry.

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