

SEMANTIC AND MORPHOLOGICAL RESTRICTIONS IN EXPERIENCER PREDICATES*

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It has long been observed that both the meaning and the form of a verb play a role in determining the syntactic configurations in which this verb is found. For example, *give*, but not *donate* or *wash*, is used in the double-object construction: *I gave/*donated/*washed Mary a car*. The contrast has been attributed in part to morphophonological properties, like the Latinate form of *donate*, and in part to semantic properties, like the fact that *wash* does not imply a transfer of possession (Oehrle 1976). In this paper, I propose that another constraint on verb distribution, the Target/Subject Matter (T/SM) restriction (Pesetsky 1995), also arises from a combination of morphological and semantic factors. I argue that semantic selectional restrictions rule out certain derivations that would give rise to a T/SM violation, while morphological selectional restrictions guide the pronunciation of the well-formed derivations. This conclusion supports the position of Distributed Morphology that semantic, but not morphological information is available during the syntactic derivation (Halle & Marantz 1993).

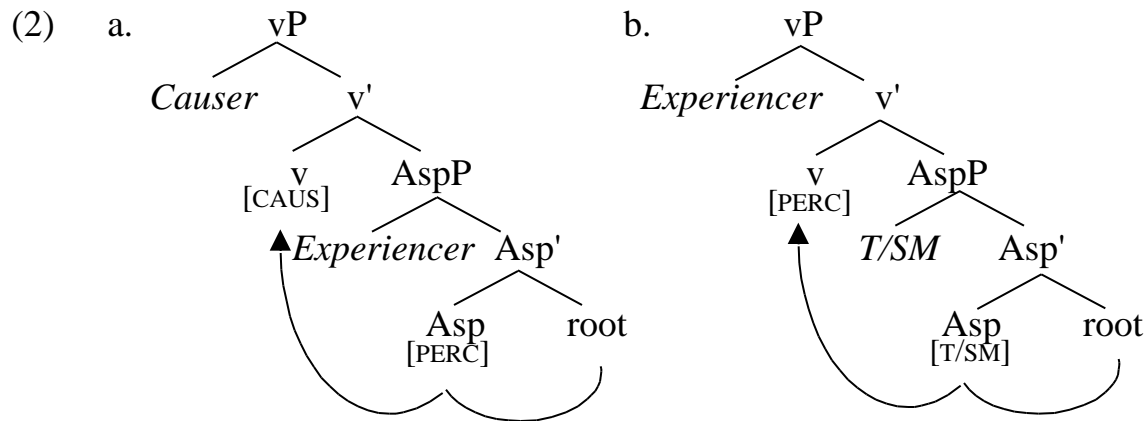
1 The Proposal

The T/SM restriction is a descriptive generalization illustrated in (1). Although a psych verb can have a Causer argument and an Experiencer argument (1a), or an Experiencer and a T/SM (1b), there are no ditransitive verbs with a Causer, an Experiencer, and a T/SM (1c).

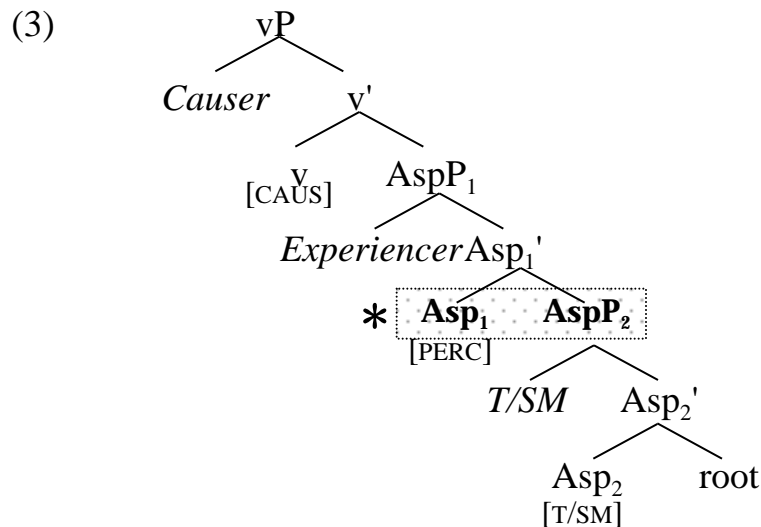
- (1) a. [_{Caus} The article] frightened [_{Exp} Bob].
b. [_{Exp} Bob] feared [_{T/SM} the future].
c. * [_{Caus} The article] frightened [_{Exp} Bob] [_{T/SM} (of) the future].

The syntactic representations I adopt are shown in (2). For Object Experiencer (ObjExp) predicates like (1a), the Causer is generated in the specifier of a causative *v* head (2a), while the Experiencer is in the specifier of an Aspect head (Asp) (see Travis 1991). The nature of the experience is specified by the lexical root, which has no intrinsic category (Marantz 1997). For Subject Experiencer (SubjExp) predicates like (1b), the Experiencer is generated in the specifier of a *v* head whose meaning conveys perception (see Pykkänen 1998), while the T/SM is in the specifier of Asp (2b).

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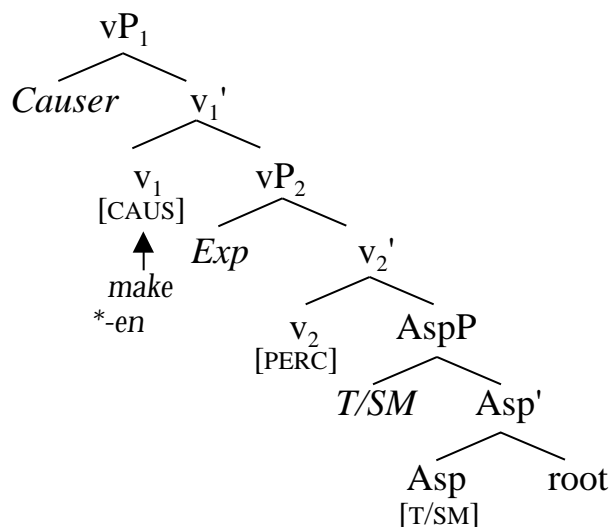
There are two possible ways of combining the two trees in (2) to yield a clause with Causer, Experiencer, and T/SM arguments. One way is to generate the derivation in (3). In this derivation, the Causer is in spec-*v*P, while the Experiencer and T/SM arguments are both generated in specifiers of AspP. I propose that this derivation is semantically uninterpretable: although *v* can semantically select an AspP complement, Asp selects a lexical root. In (3), the higher Asp has selected an AspP complement, so the derivation is ill-formed. Assuming it can be generated at all, this derivation will crash at the LF interface. The proposal that this restriction is semantic correctly predicts that Asp is prevented from taking an AspP complement cross-linguistically (see section 2).



On the other hand, another possible combination of (2a) and (2b) yields the derivation in (4). This derivation is well-formed, since *v* can take a *v*P complement. However, in English this derivation cannot be pronounced using a lexically specified synthetic causative; the default analytic causative must be used instead. Thus (5a) is blocked by the preferable (5b), where the causative *v* is pronounced with the default causative vocabulary item, *make*. The proposal that this restriction is morphological correctly predicts that it is subject to cross-linguistic variation (see section 4).¹

¹ Section 4 shows cross-linguistic variation in the form of lexically specified and default causatives. The proposed account also predicts that no T/SM restriction will arise in a language that lacks lexically specified causatives. I have not yet found such a language.

(4)



- (5) a. *The article in the paper **feared/frightened** Bob (of) the future.
b. The article in the paper **made** Bob **fear** the future.

The analysis presented here assumes the theory of Distributed Morphology (Halle & Marantz 1993). A central aspect of this theory is Late Insertion, under which the Lexical items manipulated by the syntax are bundles of syntactic/semantic features with no phonological content. Vocabulary items with phonological content compete for insertion into terminal nodes of the syntactic structure. Late Insertion contrasts with Lexicalism, under which the syntax manipulates atoms with syntactic, semantic, and phonological features. Under the Lexicalist view, morphophonological information is present in the syntax, and (in principle) could influence syntactic derivations. I will argue that the Late Insertion view makes the right predictions in accounting for the T/SM restriction.

Selectional restrictions arise from each of the two syntactic interfaces — semantic and morpho/phonological. Semantic selectional restrictions constrain (presumably universally) what can be merged in the syntax: for example, a determiner can merge with a noun (*the songs*), but not with a verb (**the sings*). In addition, language-particular morphological selectional restrictions guide the insertion of Vocabulary items into syntactic terminal nodes. A Vocabulary item can be associated with (a) a syntactic category, (b) a set of intrinsic syntactic/semantic features, and (c) a set of contextual features. An item can be inserted into a terminal node only if its category and feature specifications match those of the node. However, the morphology does not rule out otherwise well-formed syntactic derivations; if a mismatch prevents a highly specified Vocabulary item from being inserted, a less specified item is used instead.

Another key assumption adopted here is the syntactic decomposition of phonological words. I assume that verbs are syntactically complex, with different theta-roles arising from different syntactic configurations (Hale & Keyser 1993, Pesetsky 1995). Under this view, systematic “lexical” semantics can be syntactically represented. For example, aspectual and thematic differences between Agent-Patient sentences and Experiencer-T/SM sentences can be represented as differences in the semantic features of the heads assigning theta roles. By contrast, idiosyncratic semantics (like the difference between *cat* and *dog*, or between *kick*

the pail and kick the bucket) is not syntactically represented, but instead is determined in a post-syntactic component called the Encyclopedia (Halle & Marantz 1993). I assume lexical categories are phrasal, consisting of a category-neutral lexical root combined with at least one category label (Pesetsky 1995, Marantz 1997).

2 Semantic selectional restrictions on Asp

Under the analysis sketched above, semantic selectional restrictions rule out one potential way of deriving a clause with a Causer, an Experiencer, and a T/SM. Specifically, if both the Experiencer and the T/SM argument are generated in specifiers of AspP, the structure is ill-formed because Asp cannot take an AspP complement. This proposal has consequences not only for Experiencer predicates, but also for another type of predicate, involving a Suggestor argument.

Each of the well-formed structures proposed for Experiencer predicates in (2) has one argument generated in spec-vP and one in spec-AspP. Evidence for these heads can be found in a number of languages. In Georgian, for example, the perception *v* of SubjExp verbs can be pronounced **i-** (6a) or **u-** (6b), agreeing with the Experiencer, to which it assigns dative morphological case. This head may also assign dative case in other languages with dative Experiencers, including Albanian (Massey 1992), Icelandic, Japanese, and Kannada (see Harley 1995 and references).

- (6) a. Me ana m-**i**-qvar-s.
 1sg.DAT Ana-NOM 1-PERC-love-PRES
 ‘I_{Exp} love Ana_{T/SM}.’
- b. Mas ana **u**-qvar-s.
 3sg.DAT Ana-NOM PERC-love-PRES
 ‘He_{Exp} loves Ana_{T/SM}.’ (Aronson 1990)

The causative *v* can also be spelled out morphologically. In Finnish, the same root can be used for SubjExp (7a) and ObjExp (7b) verbs. In the ObjExp version, causative *v* is spelled out with the regular causative suffix (Pylkkänen 1998).

- (7) a. Maija inhoa-a Matti-a.
 M.-NOM find.disgusting-3SG M.-PAR
 ‘Maija_{Exp} found Matti_{T/SM} disgusting.’
- b. Matti inho-**tti** Maija-a.
 M.-NOM find.disgusting-CAUS.PAST M.-PAR
 ‘Matti_{Caus} disgusted Maija_{Exp}.’

The stative aspectual component plays a role in the interpretation of the verb and also appears in certain nominalizations, overtly in Polish, where perfective aspect

(8a) and imperfective aspect (8b) are distinguished (Schoorlemmer 1995, Alexiadou 1999; see also Slabakova 1996 for Bulgarian).²

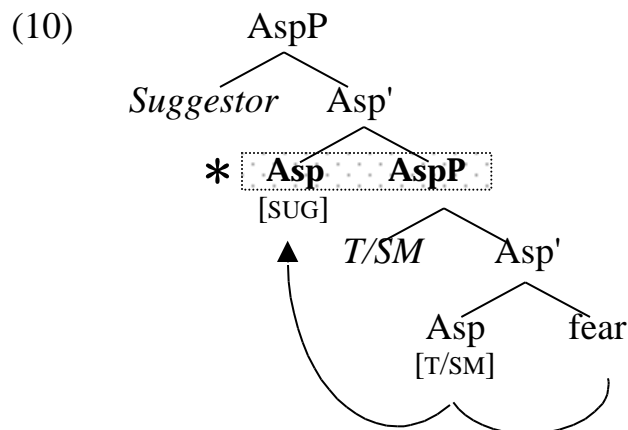
- (8) a. **Oceni-*enie*** studentow przez nauczycieli nastapilo szybko.
 evaluation-**PF** students-GEN by teachers occurred quickly
 ‘Evaluation of the students by the teachers occurred quickly.’
- b. **Oceni-*anie*** studentow przez nauczycieliciagnelo sie
 evaluation-**IMP** students-GEN by teachers lasted REFL
 przez caly tydzien.
 through whole week
 ‘Evaluation of the students by the teachers lasted the whole week.’

I have proposed that the Asp head selects a lexical root; it cannot take another AspP as its complement. Thus, although (3) is a logically possible derivation for a clause containing a Causer, an Experiencer, and a T/SM, it is ruled out by semantic selectional restrictions.

Further evidence that Asp selects a lexical root can be drawn from Suggestor predicates. Some psychological predicates allow either an Experiencer (9a) or a Suggestor subject (9b). While the Experiencer is an individual that undergoes the psychological state described by the predicate, the Suggestor is an aspect of behaviour that suggests this psychological state. Experiencer predicates can also have a T/SM (9a). However, a predicate cannot have both a Suggestor and a T/SM (9c) (Higgins 1973, Pesetsky 1995).

- (9) a. [_{Exp} Carol] was fearful ([_{T/SM} of earthquakes]).
 b. [_{Sug} Carol’s expression] was fearful.
 c. * [_{Sug} Carol’s expression] was fearful [_{T/SM} of earthquakes].

If the Subject Matter argument in (9a) and the Suggestor in (9b) must be generated in specifiers of separate AspPs, then the claim that Asp does not select AspP accounts for the ungrammaticality of (9c). The ill-formed structure is shown in (10).



² For further arguments that Experiencer predicates contain vP and AspP, see McGinnis (2000).

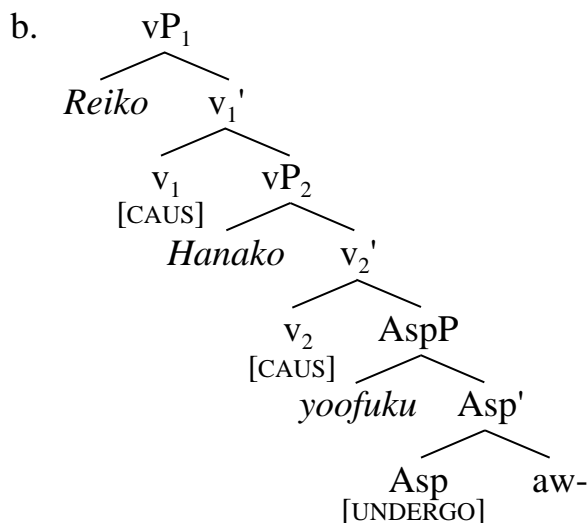
A key distinction can be drawn between Suggestors and Experiencers. By hypothesis, a Suggestor is always generated in spec-AspP, while an Experiencer can be generated either in spec-AspP or in spec- ν P.³ Thus, if Asp cannot take an AspP complement, there is another way to generate a clause with a Causer, an Experiencer, and a T/SM: the Experiencer can be generated in the specifier of ν P, with the T/SM in a lower AspP. In some languages, this well-formed structure can be pronounced using a synthetic causative, while in others it cannot (see section 3). On the other hand, a Suggestor can never combine with a T/SM argument in a single clause. The claim that the structure in (10) is ruled out by semantic selectional restrictions predicts that examples like (9c) cannot be “rescued” by using different Vocabulary items, which seems to be true. It also predicts that such examples are universally ill-formed (see section 4.4).

3 Morphological restrictions on causative ν

A well-formed structure for a clause containing a Causer, an Experiencer, and a T/SM was shown in (4). In English, however, such a clause cannot be pronounced using a synthetic causative like *frighten*. This prohibition results from morphological restrictions on causative Vocabulary items. In English, the unrestricted (“default”) causative Vocabulary item is an independent phonological word, *make* (Miyagawa 1998).

Unlike AspP, ν P is recursive: ν can take a ν P complement. Evidence for recursive ν P structures comes from double causatives such as the Japanese example in (11). The word for *match* is a causative of the word for *meet*, which can itself be causativized. A structure for (11a) is given in (11b), where one causative ν takes a second causative ν P as its complement (Harley 1995).

- (11) a. Reiko-ga Hanako-ni yoofuku-o aw-**ase-sase**-ta.
 Reiko-NOM Hanako-DAT clothing-ACC meet-CAUS-CAUS-PAST
 ‘Reiko made Hanako match her clothing.’



³ Or spec-*a*P, allowing an Experiencer and a T/SM to combine in (10a).

Although causative *v* can take a *v*P complement, there are contextual restrictions on its form. In Japanese, (*s*)*ase* is the default form of the causative (Miyagawa 1994). Other forms can be used in the context of certain lexical roots. (12) shows a few examples of roots that can appear in noncausative and causative contexts (from Jacobsen 1992). The causative is pronounced *-e* in (12a-b), *-s* in (12c-d), and *-as* in (12e-f). In other contexts, the default is used (12g). Lexically restricted causatives are subject to a locality condition: they cannot be used for *v* when it takes a *v*P complement, as the outer *v* does in (11). In this environment, only the default causative can be used (Miyagawa 1994).⁴

(12)	<i>Noncausative</i>		<i>Causative</i>	
a.	ag-ar-u	‘rise’	ag- e -ru	‘raise’
b.	ak-u	‘open _{intr} ’	ak- e -ru	‘open _{tr} ’
c.	hazu-re-ru	‘come off’	hazu- s -u	‘take off’
d.	ta-ri-ru	‘suffice’	ta- s -u	‘add, supplement’
e.	kog-e-ru	‘become scorched’	kog- as -u	‘scorch’
f.	nar-u	‘ring _{intr} ’	nar- as -u	‘ring _{tr} ’
g.	sir-u	‘know’	sir- ase	‘inform’

Similar restrictions apply in English (Miyagawa 1998, McGinnis 2000). Again, the form of causative *v* can be lexically specified, but here an independent phonological word, *make*, is the default. Some vocabulary items for English causative *v* are shown in (13). Lexically specified items are inserted if possible. For example, *-ify* is inserted for causative *v* in the environment of any of a certain class of roots such as *terr-* or *horr-*, which I assume here to share an arbitrary diacritic feature [X]. If the root has none of the features associated with a lexically specified causative, the default causative is used instead; for example, the verb *meet* has no synthetic causative. Moreover, as in Japanese, the default causative is used if another *v* intervenes between Asp and the causative *v*.

(13)	[CAUS]	<i>-ify</i>	in env.	root + Asp + ___	X: <i>terr-, horr- ...</i>
				 [X]	
	[CAUS]	<i>-en</i>	in env.	root + Asp + ___	Y: <i>fright ...</i>
				 [Y]	
	[CAUS]	<i>-∅</i>	in env.	root + Asp + ___	Z: <i>please, disgust, anger ...</i>
				 [Z]	
	[CAUS]	<i>make</i>	elsewhere		

We now return to Experiencer verbs. Recall that the structure in (4) is a syntactically well-formed clause containing a Causer, an Experiencer, and a T/SM.

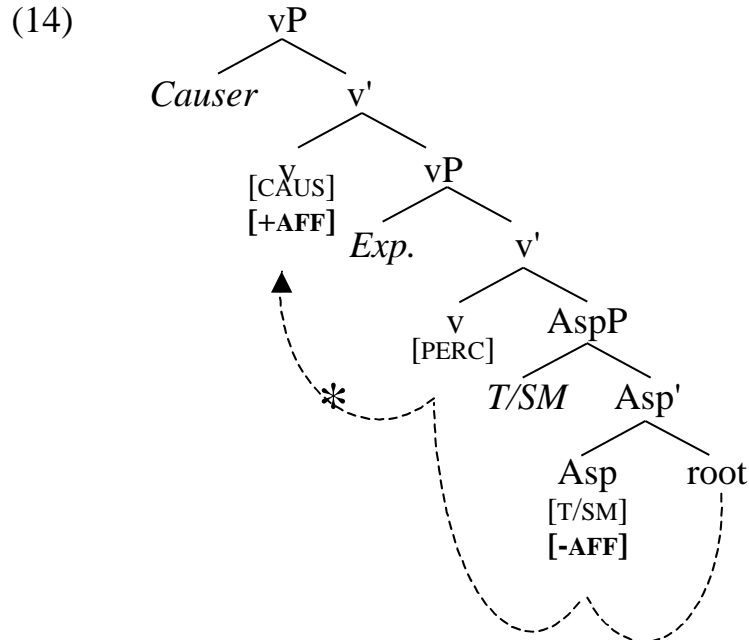
⁴ I assume that the locality constraint on causative Vocabulary items is specified for each item. This account misses the generalization that many causative affixes seem to show the same restriction, both within and across languages. However, it must be noted that *v*P is not always a locality barrier for contextual restrictions on Vocabulary items. For example, although the default Tense item in English is *-ed*, other items are used with certain roots (*bough-t*, *hit-∅*, and so forth: Halle & Marantz 1993) even though *v*P intervenes between Tense and the root.

However, the causative v does not satisfy the locality requirements on synthetic causative items in English, so it must be spelled out using default *make*, as in (5).

I have proposed that a well-formed clause may contain a Causer, an Experiencer, and a T/SM. In such a clause, the causative v merges with a perception vP , in whose specifier the Experiencer is generated. However, locality restrictions on lexically specified causative Vocabulary items ensure that a default causative item is used to spell out causative v in this environment.

4 Evidence for the selection account

The proposed account of the T/SM restriction hangs on the distinction between lexically specified and default causatives, rather than on that between synthetic and analytic causatives. Pesetsky (1995) proposes a different account, whereby the T/SM restriction arises from a mismatch between affixal and non-affixal syntactic heads. Pesetsky's account can easily be transferred to the clause structure assumed here. Suppose that the Aspect head projecting the T/SM argument is syntactically specified as non-affixal, and that a Causer, but not an Experiencer, is projected by an affixal v which must attach to the lexical root. No problem arises if an Experiencer is generated above a T/SM argument, as in a SubjExp clause. However, if a Causer is generated above a T/SM argument, the non-affixal T/SM Asp head will block affixation of the causative v head to the lexical root (14). As we will see, several predictions of this affixation account differ from those of the selection account proposed above.



4.1 “Rescuing” T/SM violations

Under the selection account, the T/SM violation arising with synthetic causatives in English can be “rescued” by using an analytic default causative, which is not subject to locality restrictions. The affixation account makes the same predictions for English. Under this account, the synthetic causative is ill-formed

because the T/SM head blocks affixation of the causative. The analytic causative does not need to affix to the verb root, so no violation is expected.

However, the predictions of the affixation account do not hold up as well cross-linguistically. In Japanese, an ObjExp verb can be created by adding a lexically specified causative suffix to a SubjExp verb (15a-b). However, as predicted, the synthetic default causative (*s*)*ase* is used in a clause containing a Causer, an Experiencer, and a T/SM (15c-d) (Kazuaki Maeda, p.c.).

- (15) a. Kimiko-ga sono koto-ni odoroi-ta.
 Kimiko-NOM that fact-DAT surprise-PAST
 ‘Kimiko_{Exp} was surprised at that fact_{T/SM}.’
- b. Sono ronbun-ga Kimiko-o odorok-**asi**-ta.
 that paper-NOM Kimiko-ACC surprise-CAUS-PAST
 ‘That paper_{Caus} surprised Kimiko_{Exp}.’
- c. *Sono ronbun-ga Kimiko-o sono koto-ni odorok-**asi**-ta.
 that paper-NOM Kimiko-ACC that fact-DAT surprise-CAUS-PAST
 ‘That paper_{Caus} surprised Kimiko_{Exp} at that fact_{T/SM}.’
- d. Sono ronbun-ga Kimiko-o sono koto-ni odorok-**ase**-ta.
 that paper-NOM Kimiko-ACC that fact-DAT surprise-CAUS-PAST
 ‘That paper_{Caus} made Kimiko_{Exp} surprised at that fact_{T/SM}.’

In Japanese, then, a T/SM violation can be “rescued” by using an affixal default causative, *-(s)ase*. This result is not expected under the affixation account. If the T/SM violation in (15c) is caused by a mismatch between an affixal causative head and a non-affixal T/SM head, then the affixal causative head in (15d) should be equally problematic. If the T/SM head is affixal, the ill-formedness of the lexically specified causative in (15c) is unexplained.

By contrast, the selectional account makes the correct predictions. Locality restrictions on the lexically specified causative ensure that a clause containing a Causer, an Experiencer, and a T/SM uses the default causative item.

4.2 T/SM with analytic causatives

In English, no T/SM violation arises with an analytic causative. Under the selection account, this is because the analytic causative is the default causative. Under the affixation account, it is because an analytic causative need not affix to the verb root. In fact, the affixation account predicts that no T/SM violation will arise with analytic causatives. This prediction also seems not to hold up cross-linguistically.

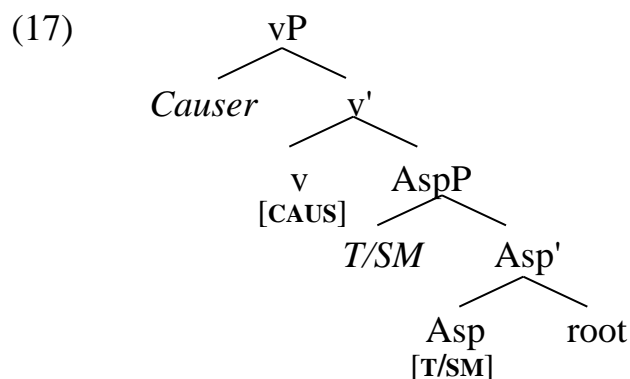
In Chinese, analytic causatives can be contextually specified. For example, the SubjExp predicate *disappointed* is spelled out using the inseparable adjective *shiwang* (16a), while causative ObjExp *disappoint* is spelled out as the separable verb *shi...wang* (16b). In a clause containing a Causer, an Experiencer, and a T/SM, however, another analytic causative must be used, namely the default *ling*, in combination with adjectival *shiwang* (16c-d) (Ying Ying Lui, p.c.).

- (16) a. Wo dui zengfu hen shiwang.
I with government very disappointed
'I_{Exp} was very disappointed with the government_{T/SM}.'
- b. Ni shi wo wang.
you V1 me V2-disappoint
'You_{Caus} disappointed me_{Exp}.'
- c. *Ni shi wo dui zengfu wang. (any order)
you V1 me with government V2-disappoint
'You_{Caus} disappointed me_{Exp} with the government_{T/SM}.'
- d. Ni ling wo dui zengfu hen shiwang.
you CAUS me with government very disappointed
'You_{Caus} made me_{Exp} disappointed with the government_{T/SM}.'

Again, the selection account makes the correct predictions. The lexically specified causative, though analytic, cannot be used in a clause containing a Causer, an Experiencer, and a T/SM argument, due to locality restrictions.

4.3 Causer-T/SM predicates

The affixation account also predicts that the non-affixal T/SM head will block affixation of the causative even when no Experiencer is present. By contrast, the account presented here predicts that the structure in (17) is fine.



Arguably, certain transitive verbs do have the structure in (17). The semantic relation of the two underlined phrases in (18a), with an Experiencer, appears to be the same as in (18a), with no Experiencer: *the article* is a Causer, while *the police* is the Target of the state denoted by the predicate (*anger*, *disgrace*, and so forth). Likewise, in (19), *the future* is the Subject Matter of the state denoted by the predicate, and *her stories* is a Causer of that state, with or without an Experiencer.⁵

⁵ Note that if the subject of *suggest* is a Suggestor, and its object a T/SM, this verb unexpectedly violates the ban on Suggestor-T/SM predicates, which under the current account follows from the claim that Asp cannot take an AspP complement (see section 2). The problem is solved if (20) is indeed the correct structure for (22b).

- (18) a. The article made Mary angry at the police.
 b. The article implicated / exonerated / disgraced / absolved the police.
- (19) a. Her stories made Norman fear the future.
 b. Her stories suggested / foreshadowed / indicated / foretold the future.

4.4 *SUG+T/SM predicates

Pesetsky (1995) proposes that Suggestors, like Causers, are projected by an affixal head that must attach to the lexical root. If it attaches outside a T/SM argument, the T/SM head will block the SUG head from attaching to the root, and the derivation crashes. Because this restriction is morphosyntactic, we might expect it to vary cross-linguistically. For example, in agglutinative languages like Japanese, we might expect the T/SM head to be affixal; or, in isolating languages like Chinese, we might expect the SUG head to be non-affixal. Under the selection account, on the other hand, the ban on Suggestor-T/SM clauses arises from a semantic selectional restriction, which should hold across languages. In fact, the restriction on Suggestor predicates arises in both Japanese (20) and Chinese (21).

- (20) a. Kazuaki-wa (syoorai-ni-tuite) rakkanteki datta.
 Kazuaki-TOP future-DAT-about optimistic was
 ‘Kazuaki_{Exp} was optimistic (about the future_{T/SM}).’
- b. Kazuaki-no taido-wa (*syoorai-ni-tuite) rakkanteki datta.
 Kazuaki-GEN behaviour-TOP future-DAT-about optimistic was
 ‘Kazuaki’s behaviour_{Sug} was optimistic (*about the future_{T/SM}).’
- (21) a. Ying (dui kaoshi) hen jinzhang.
 Ying about exam very nervous
 ‘Ying_{Exp} was nervous (about the exam_{T/SM}).’
- b. Ying de biaoqing (*dui kaoshi) hen jinzhang.
 Ying (POSS expression) about exam very nervous
 ‘Ying’s expression_{Sug} was nervous (*about the exam_{T/SM}).’

5 Conclusion

I have argued above that the T/SM restriction is really two restrictions: one, a semantic selectional restriction that prevents Asp from taking an AspP complement; and the other, a contextual restriction on the insertion of certain causative Vocabulary items in the morphology. Morphological selectional restrictions guide the pronunciation of the syntactic derivation, while the semantic selectional restriction actually filters the derivation. As a result, a clause containing a Causer, an Experiencer, and a T/SM can be “rescued” by using a default causative Vocabulary item, but a clause containing a Suggestor and a T/SM cannot be “rescued”, since it is semantically ill-formed. The proposed account makes new and promising predictions.

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