

# Deriving Pairedness in $vP$ structure: Minimalist yet Optimal

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## Abstract

Minimalist accounts lack a natural theory of markedness, whereas Optimality-Theoretical accounts lack derivational procedure. We argue, then, that neither standard Minimalist nor standard Optimality-Theoretical frameworks enable straightforward, parsimonious accounts of what we call pairedness behavior, where a given language exhibits multiple forms occupying the same niche. We adopt a hybrid OT/MP account, first, to explain the unmarked/marked dichotomy of anticausatives in German, and, second, to explain why languages often exhibit direct and indirect causatives.

## 1 Introduction

Schäfer [2007] recently argued that reflexive *sich* marked anticausatives in German are not transitive, as opposed to *se/si* reflexive anticausatives in Romance. In an Optimality-Theoretic framework, the Richness of the Base hypothesis prohibits discussion of pairs of marked and unmarked items as specially related at the level of input (GEN). An OT account of marked/unmarked anticausative pairs would be forced to institute, at least in the case of German, two separate input structures, and as such, lacks the ability to *connect* between the members of the markedness pair. On the other hand, the Minimalist Program lacks a natural notion of markedness. The assumption of discrete interfaces often dictates that S/M and C/I do not independently vary, such that a form is grammatical, or not; it is typically assumed that a derivation must converge at both interfaces. It follows, then, that Minimalist accounts lack the ability to *distinguish* items of a markedness pair.

Generalizations regarding a form's phonetic manifestation and its semantic representation are difficult to couch in the Minimalist Program, given that the MP holds the interfaces to be wholly separate, held in tandem by Narrow Syntax. Yet, cross-linguistically,

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such a generalization seem to hold regarding causatives: the causative form's relative phonological length is a predictor of its semantic yield.<sup>1</sup>

Thus, we propose a hybrid OT-MP framework, whereby the Minimalist Narrow Syntax serves as overgenerative output to OT grammars at each of the interfaces. In principle, this is congruent with a Multiple Spell-Out approach, with the locus of our investigation situated in the *v*P shell. In doing so, the framework naturally derives the marked/unmarked pair distinction, as derivationally related structures are independently evaluated at the interfaces; thus, a structure can be said to be C/I marked and S/M optimal, or S/M marked and C/I optimal. The marriage of discrete syntax and gradient interfaces also enables us to couch hypotheses relating a form's phonological manifestation and its semantic properties which are not possible in standard Minimalism. This marriage is thus both empirically adequate and conceptually motivated on Minimalist desiderata which locate variation at the interfaces.

## 2 Approaches to Anticausatives

*I. a Minimalist Program approach-Schäfer 2007*

Schäfer [2007, 199] presents data for a distinction between what he terms marked and unmarked anticausatives.

### German Marked

- (1) Die Tür öffnet *sich*  
the door opens REFL  
'The door opens'

### German Unmarked

- (2) Die Vase zerbricht.  
the vase breaks  
'The vase breaks'

### Italian Marked

- (3) La finestra si chiusa.  
the window REFL are closed  
'The window closed'

### Italian Unmarked

- (4) I prezzi sono aumentati.  
the prices are increased  
'The prices increased'

### Greek Marked

- (5) I supa kegete  
the soup.NOM burns.NACT  
'The soup burns'

### Greek Unmarked

- (6) I sakula adiase  
the bag.NOM emptied.ACT  
'The bag emptied'

Schäfer first vigorously argues that this *sich/si* form is not a true reflexive; he also refutes the analysis of the form as a telicity marker [Folli, 2001]. The form does not also

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seem to manifest with identical properties across German, Italian, and Greek; and it for these reasons that Schäfer avoids the term *reflexive*, as well as the term *unaccusative*, for the German marked anticausatives may in fact be structurally transitive. Thus, the marked anticausative is realized as a full pronominal in Germanic, as a pronominal clitic in Italian, and as transitive verb morphology in Greek. The variety in forms is manifest not only in their surface morphology, but also syntactic and semantic properties, as Schäfer explores.

Schäfer demonstrates that dative causer attachment to unmarked German and Romance anticausatives yields an ambiguity between affectedness and accidental readings of the dative causation.

### German

- (7) Die Vase zerbrach dem Hans (aus Versehen)  
the vase broke the.DAT John (by mistake)  
'John was affected by the vase breaking'

'John unintentionally caused the vase to break' [Schäfer, 2007, 58]

### Italian

- (8) A Franco sono appassite tutte le piante in giardino (per errore)  
to Franco are.3.PL wilted.PL all the plants in.the garden (by mistake)  
'All the plants in the garden wilted on Franco'

'Franco accidentally caused all the plants in the garden to wilt' (p.c. Roberta D'Alessandro and Chiara Frigeni as cited in Schäfer p. 84)

Schäfer submits that Germanic but not Romance marked anticausatives with dative causers do not exhibit affectedness readings, which Schäfer takes to be diagnostic of verb transitivity; on his account, Germanic marked anticausatives are syntactically transitive and block the structure yielding the affectedness reading, whereas their syntactically intransitive Romance counterparts permit this structure.

### German

- (9) Die Vase zerbrach dem Hans (aus Versehen)  
the vase broke the.DAT John (by mistake)  
'John was affected by the vase breaking'

'John unintentionally caused the vase to break' [Schäfer, 2007, 58]

### German

- (10) Der Maria öffnete *sich* die Tür (\*aus Versehen)  
 the.DAT Mary opened REFL the door by mistake  
 'The door opened unintentionally and Mary was affected by this'

\*'Mary unintentionally caused the door to open' [Schäfer, 2007, 58]

This evidence leads Schäfer to argue for the following typology.

Interpretation:	Syntax:	Spell-Out:
active:	[Agent [VoiceD, agent [ V [ Root ]]]]	(active)
passive:	[Voiceagent [ V [ Root ]]]	(non-active)
anticausative-I:	[Expl. [VoiceD, [ V [ Root ]]]]	( <i>sich</i> )
anticausative-II:	[Voice [ V [ Root ]]]	(non-active, clitic- <i>si</i> )
anticausative-III:	[V [ Root ]]	(unmarked)
[Schäfer, 2007, 237]		

Schäfer argues, then, that German marked anticausatives are syntactically transitive, with an epithetic external argument. This marking on the verb, Schäfer argues, reflects the verbal root's lower event spontaneity; the transitivization on the verb vacuously satisfies the requirement that non-spontaneous events be caused.

On his analysis, Romance and German both exhibit anticausative-3, as intransitive unmarked anticausatives. Where Romance and German differ is that Romance selects the intransitive anticausative-II as its marked form, whereas German selects the transitive anticausative-I as its marked form. That Germanic marked anticausatives are transitive suggests that the *sich* form is expletive, which is exactly Schäfer's conclusion. It also follows that the Romance *si* form is not an argument position, but the Spellout of *Voice*.

## II. an Optimality-Theoretic approach (Grimshaw 1999; Legendre and Sorace 2003)

Grimshaw [2001] approaches the emergence of marked anticausatives in Romance from an Optimality-Theoretic framework. On this account, the *si* reflexive is marked, but underspecified for reflexive, gender, and case; other clitics are fully specified in the least marked form, the third person. For a third person non-reflexive input, then, a particular fully specified third-person clitic will be perfectly faithful to the input. However, when the input is non-third person or reflexive, the underspecified marked anticausative form emerges, as the fully specified clitics are suboptimally faithful.

Taken as a diagnostic of unaccusativity, reflexive marking can be taken as a type of split intransitivity, the phenomenon whereby a particular verb manifests differentially in distinct languages and environments. In their approach to the unaccusativity diagnostic of auxiliary selection, Legendre and Sorace [2003, 11] rebut the argument that unaccusativity is discretely and uniformly projected. They submit that the unaccusativity of a given verbal entry can vary cross-linguistically as well as inter-linguistically, in the phenomenon referred to as split intransitivity. As an example of the former, Legendre and Sorace ex-

amine the verb *blush*: Italian *arrossire* is unaccusative, yet the Dutch *kleuren* is unergative. As an example of the latter, a verb's behavior may vary within a given language, even in response to a single diagnostic (e.g., *continuare* *continue* can take both auxiliary *essere*/*E* "be" and auxiliary *avere*/*A* "have" in Italian [Legendre and Sorace, 2003, 2]. As elucidated by Legendre and Sorace [2003, 2]: "The challenge has long been the identification of the syntactically relevant components of meaning in different languages and the search for a theory that could account for their reciprocal interaction. Perhaps at the heart of this challenge is the desire from a conceptual perspective to deliver a framework that has the ability to explain how lexical semantics or aspectual representations underlying individual verbs are mapped onto the binary syntactic representations underlying structures such as split intransitivity" (Legendre and Sorace, .ibid.). Thus, Legendre and Sorace [2003, 11], "the solution offered [in Legendre [1989] ] is less than satisfying because it fails to capture that, informally speaking, some verbs are more unaccusative than others".

Sorace [2000]'s Auxiliary Selection Hierarchy (ASH) (as cited in [Legendre and Sorace, 2003, 3] ) encodes this intuition, replacing the binary Unaccusative Hypothesis with a continuum of verb behavior.

The Auxiliary Selection Hierarchy	
CHANGE OF LOCATION	Selects "BE" (least variation)
CHANGE OF STATE	
CONTINUATION OF A PRE-EXISTING STATE	
EXISTENCE OF STATE	
UNCONTROLLED PROCESS	
CONTROLLED PROCESSES (MOTIONAL)	
CONTROLLED PROCESS (NON MOTIONAL)	Selects "HAVE" (least variation)

Similar to the continuum of event spontaneity proposed by Schäfer (as discussed in the previous subsection), the ASH seeks to relate the quality of the semantic event encoded by the verb with the verb's syntactic projection. Verbs in the categories at either end of this continuum consistently project as unaccusative or unergative, but *peripheral* verbs near the continuum's center will be seen to vary cross - and intra-linguistically. Legendre and Sorace suggest that the threshold for a given diagnostic (in their work, auxiliary selection) is set at a different point in the continuum for a given language.

Though intuitive, it stipulates this relationship. Thus, Legendre and Sorace seek to derive the ASH within the Optimality-Theoretical framework, grounding (in the OT sense of the term) this relationship within constraints of the cognitive niche. As such, they first present the following typological characterization of argument realization.

**Eventive scales:**

*no motion* > *motion*

*non-directed change* > *directed change*

*control* > *no control*

*change* > *state*

**Aspectual scale:**

*atelic* > *telic*

**GF scale:**

1 (*Subject*) > 2 (*Direct Object*) [Legendre and Sorace, 2003, 16]

In the above abstract scales, > does not express a markedness relation, but a transitivity relation. From these abstract scales, they derive the following constraints. \*1/TE(lic) bans the occurrence of [+TELIC] on the external argument, whereas \*1/DIR(ected) bans directed change (themehood) on the subject. \*1/ST(ative) prohibits the subject from being stative, while \*1/-CON(trol) prohibits non-controlling subjects (potentially, instrument subjects). \*1/MOT(ion) prohibits motion subjects. Legendre and Sorace additionally posit \*2, which is a prohibition against unaccusative configurations. The ranking of \*2 against the Universal Hierarchy above is seen to represent the threshold which auxiliary selection is sensitive to, and their typology correctly predicts the distribution of split intransitivity in French and Italian.

*\*1/TE* >> *\*1/DIR* >> *\*1/ST* >> *\*1/-CON* >> *\*1/MOT*

The ASH as originally posed bears resemblance to the Distributed Morphology account of the Encyclopedia, a world knowledge repository for the purposes of morphological construction which is itself distinct from the derivational machinery of Narrow Syntax. As the ASH and the Encyclopedia are each essentially lists, they are equally ontologically onerous, and as such, Legendre and Sorace's innovation is to derive the ASH from cognitively grounded and typologically motivated constraints.

Notably, their account does not include ambitransitive verbs, presumably because verb transitivity has auxiliary selection consequences of its own, complicating the empirical view. The distinction between intransitive and transitive verbs will be seen to be crucial, when situated within Schäfer's analysis of German marked anticausatives. Recall that while Romance marked and unmarked anticausatives are alike in that they are intransitive, German marked anticausatives are epithetic transitives. While we believe that Schäfer's analysis of Romance anticausative pairs could be couched with Legendre and Sorace's approach, we argue that derivational machinery is necessary to efficiently relate marked and unmarked anticausatives in German. While a bivalent approach to OT is potentially capable of linking a marked and unmarked intransitive to the same underlying decomposition in GEN via faithfulness constraints, we hold that a common derivational motif (transitive and intransitive derivations with a shared sub-derivation) is the most elegant way for tying together anticausative pairs which differ in transitivity.

### 3 Approaches to Causatives

*I. A Minimalist Approach-Pylkkänen (1998;2000)*

Pylkkänen [1999] observes, Germanic and Romance languages permit only causatives of unaccusative inchoatives, such as in the English examples below, whereas languages such as Finnish and Malagasy permit a superset of the Germanic/Romance causatives; they exhibit causatives not only of accomplishment unaccusatives, but also of activity unergatives:

- (11) a. The window broke.  
b. Pat broke the window.
- (12) a. The children laughed.  
b. \*The teacher laughed the children.
- (13) Tytt nauro-i-vat.  
girls.NOM laugh-PAST-3PL  
'The girls laughed'
- (14) Sami naura-tti tyttö-jä.  
Sami.NOM laugh-CAUSE.PAST girls-OBJ  
'Sami caused the girls to laugh'
- (15) Sami punastu-i.  
Sami.NOM blush-PAST  
'Sami blushed'
- (16) Tytt punastu-tti-vat Sami-n.  
girls blush-CAUSE.PAST-3PL Sami-OBJ  
'The girls caused Sami to blush'

In Pylkkänen's account, *Voice* renders External Causation through the semantic operation of Event Identification [Kratzer, 1996]. Her syntax of intransitives and causatives, respectively, is as depicted in 17.

- (17) a. [ $v$ P [ $v$  [ $\checkmark$  *broke* DP the chair] ] ]  
b. The chair broke.  
c. [ $VOICE_P$  [ $VOICE$  [ $\checkmark$  *broke* DP the chair] ] ] ]  
d. John broke the chair.

As Pylkkänen separates *Voice* from  $v$ , her treatment of  $v$  unergatives is suitably 'low' and can form causative unergatives through *Voice*. Pylkkänen's account at this point treats the

causative transitivization of unergative verbs on a par with the causation of unaccusative verbs. By separating further the external argument projection ( $\theta$ , on her account), from the *Voice* head, she also accounts for adversity/desiderative causative behavior in Finnish and Japanese as causatives lacking external arguments. Pytkänen is forced, however, to restrict the power of the system in ungainly ways by Minimalist desiderata to make the appropriate typological generalizations.

*II. a Gradient Functionalist Approach (Haspelmath 1993;2005; Haiman 1983)*

Haiman [1983] claims that in languages with multiple causative forms, relative phonological length of the causative is always seen to vary inversely with the causative's semantic directedness. Thus a language which possesses both a lexical causative and a periphrastic or syntactic causative form will realize the shorter form as the direct causative, with the requirement of an affected argument.

"If two causatives contrast within a given language...and they contrast semantically with respect to the conceptual distance between cause and result, then the conceptual distance between cause and result will correspond to the formal distance between cause and result" (p. 783).

Haiman's provides, among other evidence, the following contrast from Amharic, between the *A* and *AS* causatives.

(18) Abbat lægun sæga A-bälla.  
 father boy meat CAUS-eat  
 'The father fed the boy the meat'.

(19) Abbat lægun sæga AS-bälla.  
 father boy meat CAUS-eat  
 'The father forced the boy to eat the meat'.

Haiman provides more illuminative evidence from Mixtec, which exhibits three causative forms: *sa'â*, *sa'*, and *s-*. No root is seen to cooccur with all three causatives, but the following two contrasts suggest an implicational hierarchy congruent with Haiman's principle.

(20) sa'â, ha na kee  
 cause NOM OPT eat  
 'Make him eat.' (=prepare food for him to eat).

(21) s-kee  
 cause=eat



'Feed him' (= put the food directly into his mouth).

- (22) ni sa'â-de ha ni-nduu-kwa a-ri  
PAST-cause-he NOM PAST-become-red-I  
'He made me blush'

- (23) ni sa'â-kwa a-de  
PAST-cause-red-he  
'He painted (me) red.' (p. 787).

In a more specific refinement of Haiman's observation, Haspelmath [1993, 2005] observes that languages which overtly mark their causative permit it more productivity: while unmarked ambitransitive 'lexical' causatives can be formed only from unaccusatives, marked causatives are seen of unergative and unaccusative forms.

**Universal 24: [unrestricted]** If the causal and the plain verbs have the same shape (=if a language has causal ambitransitives), the plain is always patientive/unaccusative, never agentive/unergative. (p. 2).

Hale [2000, 159]

- (24) The water boiled. We boiled the water.  
The shirt dried. The sun dried the shirt.  
The ice melted. The heat melted the ice.  
The glass cracked. The high note cracked the glass.
- (25) The child laughed. \*The clown laughed the child.  
The baby cried. \*The noise cried the baby.  
Loretta sang. \*We sang Loretta.

**Universal 25: [implicational]** If a language has synthetic causal verbs corresponding to agentive/unergative plain verbs, it also has synthetic causal verbs corresponding to patientive/unaccusative non-causatives. (Haspelmath p.3)

'O'dham Hale [2000, 157-8]

- (26) a. hu/uñ 'descend' hu/u-id 'lower'  
b. cesaj 'rise' cesaj-id 'raise'  
c. ha:g 'melt (intr.)' ha:g-id 'melt (tr.)'  
d. heum 'get cold' heum-cud 'make cold'

- (27) a. ñe'ë 'sing' ñe'i-cud '\*make sb. sing' ('sing for sb.')
- b. cikpan 'work' cikpa-id '\*make sb. work' ('work for sb.')
- c. gikuj 'whistle' gikuj-id '\*make sb. whistle' ('whistle for sb.')

These two types of languages seem to correspond roughly with what Pylkkänen terms Type 1 and Type 2 languages, in that Type 1 languages, such as Finnish, do permit the causation of unergative verbs, and Type 2 languages, such as English, do not. Pylkkänen, however, does not make Haspelmath's generalization regarding the correspondence between the causative's phonological manifestation and its semantic requirements, because she can not; Minimalism, as is, strictly separates PF and LF, requiring convergence at both in Narrow Syntax. Correspondences between LF and PF of Haspelmath's type are thus uncouchable in standard Minimalism, and as such, Pylkkänen's account does not take into consideration the PF differences between Type 1 and Type 2 languages. Rather, in her account, Type 1 languages permit a degree of freedom between  $\theta$  and *Voice*, correctly predicting the occurrence of structurally unaccusative causatives<sup>2</sup>, i.e. adversity causatives. Type 2 languages, for her, must 'bundle'  $\theta$  and *Voice*, and as such, do not permit adversity causatives, and on her account, type crash at LF in attempting causatives of unergative verbs.

## 4 Analysis: Marrying Derivational and Gradient Approaches

### I. Anticausatives

Here, we endeavor to derive the typology of marked and unmarked anticausatives in a way that intuitively highlights the relatedness of the items of the pair, whether they be intransitive (as is the case in Romance) or vacuously transitive (as is the case in *sich* marked German anticausatives).

We adopt the following model: a feature driven, non-cartographic Narrow Syntax, permitting the operations Merge and Move; distinct interfaces to C/I and S/M, each represented as a gradient Optimality-Theoretical grammar; a Distributed Morphology approach to syntactic decomposition of predicates, with a locus as the *v*P shell. The model is also notable for what it doesn't contain: the derivational array within Narrow Syntax supplants (or is a notational variant of) GEN; LF constraints (including, but not limited to, the constraints proposed in Legendre and Sorace [2003] derive the Encyclopedia, and specifically, Schäfer's Event Spontaneity scale contained within; the Lexicon is a DM Lexicon, "distributing" the Lexical module across syntactic head environments (*v*), Roots within Narrow Syntax, and lexicon specific world knowledge into the interface to C/I.

We thus propose the following grounded constraints, alongside those proposed in Legendre and Sorace.

<sup>2</sup>That is, not causatives formed from unaccusatives, but rather, causatives that have no specifier, i.e., external argument.

### *Constraints at the LF Interface*

(28) **DEP-Causer+:Spontaneous events with Causers are marked.**

\*"I appeared him"

Appearing events are absolutely spontaneous. On this view, appear is not naturally syntactically intransitive, but conceptually anticausative.

(29) **DEP-Causer-: Non-spontaneous events lacking Causers are marked.**

\*"The chair destroyed"

Destroying events are non-spontaneous. Again, "destroy" is not naturally transitive; The Encyclopedia filters out non-causative verbs of creation.

(30) **Express-Participant: Event Participants must manifest morphosyntactically.**

"I broke the chair with a hammer" is in a sense more faithful than "I broke the chair".

(31) **BindPronominal: Epithetics are semantically marked.**

*Sich* in German marked anticausatives is an unbound pronominal.

(32) **II-THETA:Maximize Thematic Distinctions (The Gradient Theta Criterion)**

We want a derivation's thematic roles to be maximally distinct from each other.

### *Constraints at the Phonetic Form Interface*

(33) **PRONOUNCE: Pronounce terminals. (Purely functional heads are marked.)**

In this system, there is no principled division between a functional head and a lexical item. Thus, we view functional heads just like any other morpheme added by Merge. Ideally, PF is faithful to our derivation by pronouncing all merged elements.

(34) **Express Subevents:Complex events are denoted by multimorphemic forms.(verbalizing heads are pronounced).**

"He broke the chair" is a complex event, a causing (sub)event and a breaking (sub)event. Derivations which express this complexity with two overt morphemes are more faithful.

(35) **DEP-ARG:Argument positions are pronounced.**

“The chair was dropped” should be less faithful than “the chair was dropped by Fred”. Contextually available arguments, such as agents in passives, should be pronounced.

- (36) **DEP-ROOT: Preserve lexical faithfulness to the root: (languages prefer to have ambitransitive causative pairs).**

“He broke the chair” / “The chair broke” is optimal in this sense.

“break” is relatively faithful to the root “break” in both causative and anticausative.

There may yet exist some overlap between our event spontaneity constraints and those in the Legendre and Sorace set. However, for the present purposes of deriving pairedness, we argue that the ends of the sets of constraints are orthogonal to each other; as our constraints specify the possible inventory of anticausatives, saying relatively little about which roots may map onto these specific forms, whereas the Legendre and Sorace set is much more explicit as to how a particular verb type maps onto one of these particular forms. Suffice it to say, we leave the task of mapping particular roots to the typology of anticausative structures for future work.

Our first tableau correctly predicts that English exhibits a single, ambitransitive, anticausative form. ‘Winners’ are indicated in italics.

### Tableau 1: English

LF: DEP-Causer- >> Exp-Participant >> BindPronom >> DEP-II-THETA >> DEP-Causer+

PF: Express Subevents >> PRONOUNCE >> DEP-ROOT >> DEP-ARG

<i>✓BREAK-LF</i>	DEP-Causer-	Exp-Participant	BindPronom	DEP-II-THETA	DEP-Causer+
[v [BREAK]]		*			
[Pass-VOICE (si)[v [BREAK]]]		*			
[ EP-sich [Act-VOICE [v BREAK]]]		*	*		
<i>✓BREAK-PF</i>	Express Subevents	PRONOUNCE	DEP-ROOT	DEP-ARG	
[v [BREAK]]		*			
[Pass-VOICE (si)[v [BREAK]]]		**	**		
[ EP-sich [Act-VOICE [v BREAK]]]		**	**	*	

At LF, our ranking for English ranks BindPronom relatively high, and at PF, Pronounce is ranked high as well. As such, we correctly predict that English does not exhibit a marked anticausative.

As for German, we argue that at the LF interface, it ranks DEP-II-Theta higher than the DEP-Causer constraints, which are themselves higher than the BindPronom constraint. At the PF interface, German ranks Express Subevents high. The tableau correctly predicts that a German intransitive must be phonetically unmarked; a marked anticausative can however be produced by vacuously transitivizing the verb, with an epithetic external argument position (made relatively cheap by the low relative ranking of BindPronom).

## Tableau 2: German

LF: DEP-II-THETA >> DEP-Causer- >> DEP-Causer+ >> Exp-Participant >> BindPronom

PF: Express Subevents >> DEP-ROOT >> DEP-ARG >> PRONOUNCE

✓ <i>BREAK</i> -LF [v [BREAK] ]	DEP-II-THETA	DEP-Causer-	DEP-Causer+	Exp-Participant	BindPronom
[Pass-VOICE (si)[v [BREAK] ] ]		*		*	
[ EP-sich [Act-VOICE [v BREAK] ] ]		*		*	*
✓ <i>BREAK</i> -PF [v [BREAK] ]	Express Subevents	DEP-ROOT	DEP-ARG	PRONOUNCE	
[Pass-VOICE (si)[v [BREAK] ] ]		**		**	
[ EP-sich [Act-VOICE [v BREAK] ] ]		**	*	**	
✓ <i>BREAK</i> -LF [v [MELT] ]	DEP-II-THETA	DEP-Causer-	DEP-Causer+	Exp-Participant	BindPronom
[Pass-VOICE (si)[v [MELT] ] ]		*		*	
[ EP-sich [Act-VOICE [v MELT] ] ]		*	*	*	*
✓ <i>BREAK</i> -PF [v [MELT] ]	Express Subevents	DEP-ROOT	DEP-ARG	PRONOUNCE	
[Pass-VOICE (si)[v [MELT] ] ]		**		**	
[ EP-sich [Act-VOICE [v MELT] ] ]		**	*	**	*

However, in Italian, the relative high ranking of BindPronom makes the vacuous transitivity strategy intractable; the high ranking of the PF constraint Express Subevents permits the intransitive marked anticausative.

## Tableau 3: Italian

LF: DEP-II-THETA >> BindPronom >> DEP-Causer- >> DEP-Causer+ >> Exp-Participant

PF: Express Subevents >> DEP-ROOT >> DEP-ARG >> PRONOUNCE

✓ <i>BREAK</i> -LF [v [BREAK] ]	DEP-II-THETA	BindPronom	DEP-Causer-	DEP-Causer+	Exp-Participant
[Pass-VOICE (si)[v [BREAK] ] ]			*		*
[ EP-sich [Act-VOICE [v BREAK] ] ]		*	*		*
✓ <i>BREAK</i> -PF [v [BREAK] ]	Express Subevents	DEP-ROOT	DEP-ARG	PRONOUNCE	
[Pass-VOICE (si)[v [BREAK] ] ]		**		**	
[ EP-sich [Act-VOICE [v BREAK] ] ]		**	*	**	
✓ <i>BREAK</i> -LF [v [MELT] ]	DEP-II-THETA	BindPronom	DEP-Causer-	DEP-Causer+	Exp-Participant
[Pass-VOICE (si)[v [MELT] ] ]			*	*	*
[ EP-sich [Act-VOICE [v MELT] ] ]		*	*	*	*
✓ <i>BREAK</i> -PF [v [MELT] ]	Express Subevents	DEP-ROOT	DEP-ARG	PRONOUNCE	
[Pass-VOICE (si)[v [MELT] ] ]		**		**	
[ EP-sich [Act-VOICE [v MELT] ] ]		**	*	**	*

With its OT-interface underpinning, our account correctly predicts the emergence of a marked vacuously transitive anticausative form in German when the intransitive, moderately spontaneous form is marked at LF. Our derivational approach to GEN as Narrow Syntax, intuitively articulates that a common derivational item can ship out to the OT interfaces, and can differentially manifest as an unmarked or marked form, accounting for the Italian data. On the other hand, a transitive, *sich* marked Germanic anticausative

is derivationally related to the unmarked form; they are read off of different Spell-Outs, which allows our account to provide explanations for markedness pairs which bridge across the intransitive/transitive divide. In order to motivate a Faithfulness-constraint approach to the same problem, we would be forced to argue for either the transitive or intransitive form as more natural, to serve as the input. This approach is not only stipulative, but empirically problematic given the convergence of recent work [Alexiadou et al., 2005, Pylkkänen, 2000] which suggests that neither the transitive or intransitive is a 'base' form for the derivation of the other, but rather that both transitive and intransitive verbs are derived structures.

## II. Causatives

Next, we attempt to retain Pylkkänen [2000]'s Minimalist Narrow Syntax, and particularly, the concept that *Voice* applies as a causative transitivizer for *v* unaccusatives and *v* unergatives. However, we swap in her bundling account for a interface-markedness account, couched in Optimality-Theoretical Grammars at the interfaces. In doing so, we predict that a form generated in Narrow Syntax can have unequal markedness at the two interfaces: a given form can be LF-optimal and PF-marked (Type 1 Causatives), or can be PF-optimal and LF-Marked (Type-2 Causatives). With our adoption of OT grammars as the interfaces from Narrow Syntax to LF and PF, we not only can explain dual co-occurrences of phenomena, such as marked/unmarked 'pairs' of causatives [Haiman, 1983] and anticausatives [Schäfer, 2007] within single languages, we can also naturally couch phonological/semantic correspondences such as Haspelmath's Universals 24 and 25 *between* them, which is otherwise impossible or at least functionally orthogonal to the concerns of Minimalism.

Pylkkänen [1999, 2000] assumes that lexical and morphological causatives to be fundamentally the same phenomenon. Here we endeavor to explain why causative morphology cross-linguistically is not equally productive. Our marriage of an MP narrow syntax with OT-gradient C/I and S/M interfaces enables us to make another generalization which Pylkkänen cannot make: Type 1 languages (such as English) do not have phonologically marked causative forms, whereas the increased causative productivity of Type 2 languages (such as Finnish) is accompanied by the phonological manifestation of that causative. This was essentially Haspelmath [2005]'s Universal 25, which we effectively couch in our architecture by enabling a single syntactic object in the Narrow Syntax to be unequally marked at S/M and C/I, thus deriving the natural pairedness that Pylkkänen argues for but is unable to fully conceptually reach.

Our approach also provides a novel account of directed motion constructions, which, as observed in (37b) below, seem to escape the generalization banning causatives of unergatives in English-type languages:

- (37) a. The soldiers marched to their tents.  
b. The general marched the soldiers to the tents. [Levin and Rappaport-Havov, 1995, 111]

- c. \* The general marched the soldiers.

On our approach to causatives, we re-present/introduce Haiman [1983] generalization regarding phonological markedness of the causative and affectedness of the object argument. Haiman [1983] observes that, seemingly without exception, languages with multiple morphological causatives reserve the shorter form for direct causatives, and employ the larger form for indirect causatives, with the pertinent distinction being that direct causatives require an affected internal argument, whereas indirect causatives do not. In the conceptual system we advocate here, we model aspects of Haiders generalization in the OT-interface architecture with gradient S/M and C/I constraints:

(38) **\*Phon-Cause: Requires the non-Spell-Out of Cause at S/M**

(39) **\*Cause-Encode (Direct Causation is Affectedness Sustaining)**

The first constraint, \*Phon-Cause, is a gradient constraint at S/M requiring the non-Spell-Out of Cause, with longer causative forms registering multiple violations. The latter constraint, \*Cause-Encode, is a gradient markedness constraint at C/I, which is best understood as a generalization of immediate effects of our approach to the semantics of direct causation, briefly represented below:

$$(40) \lambda_{e_e} \lambda_{e_c} \exists e_e \exists e_c \forall e'_e (e'_e < e_e) \rightarrow \exists e'_c (e'_c < e_c) \wedge \text{Cause}(e_e, e'_c) \wedge \infty E(e_e, e'_c) \wedge \ll E(e_e, e'_c)$$

Informally, this constraint encodes the intuitive argument that causes precede their effects, and more specifically, that in direct causatives, every sub-event of an effect event must be preceded, and caused by, a sub-event of the cause macro-event (but not necessarily by a unique causing sub-event). Affectedness is an intriguing property of this definition of direct causation, as affected events self-maintain, via their many-to-one mapping with a cause sub-event. This delivers on the intuition that a directly caused event, such as the baking of an apple pie in the oven, is a self-sustained causal chain of distinct sub-events, which all trace back to the initial causing event. This complex chain of sub-events could include heating events of the oven and the pie, chemical events in the pie, etc.; it could also include intercession causing effects, such as opening the oven to check on the apple pie, thereby collapsing it. No matter, by our definition, these intercession events create new chains of effect sub-events. This definition also rules out the direct causation of activities, which lack affectedness and therefore the self-maintenance property.

An absolute universal in OT would generally be encoded as a high floating constraint. A implicational universal in OT is very typically encoded as a fixed set of high, floating constraints. Here, we choose to couch Haspelmath's Generalization within our general approach as two non-conflicting high, fixed constraints, each at a distinct interface. Forms which spell out to a given interface, for example, the interface to PF, can violate the PF constraint, \*Phon-Cause, so long as it converges at the other, and vice versa.

## Tableau 4: Causatives

LF: \*Cause-Encode

PF: Phon-Cause

LF CAUS-✓ <i>run</i>	<b>*Cause-Encode</b>
<i>I made him run</i>	
<i>I ran him</i>	***
<i>I ran him past the barn</i>	
PF CAUS-✓ <i>run</i>	<b>PHON-Cause</b>
<i>I made him run</i>	***
<i>I ran him</i>	
<i>I ran him past the barn</i>	

In the above, “I ran him’ incurs multiple violations of LF \*Cause-Encode; an exact degree of violation is not forthcoming given that no unit of causative-affectedness violation has been defined. In the second part of Tableau 4, “I made him run”, an ECM causative, does incur 3 violations of PHON-Cause, for each of the phonemes in “made”. Thus, as we saw with marked and unmarked anticausatives, a form can converge on one interface or the other, deriving the correct inverse relationship between a causative’s relative phonological length and its relative semantic directness. However, we want to be very careful not to overstate the derivational relatedness of the direct and periphrastic causative; even if one admits to the direct and periphrastic containing, for example, a common *CAUS/Voice* head (such as in Harley [1995, 2005]’s approach to Japanese *sase* causatives), we are unsure that this amount of derivational machinery should be built into the articulation of Haspelmath’s Generalization.

## 5 Conclusion

In this paper, we provide an OT-MP interface account of marked vs. unmarked anticausative alternations. An advantage to our treatment of these related structures is the obviation of the pairedness issues outlined in earlier sections. Any conceptual framework that makes use of violable constraints, i.e., OT and its predecessor HG, presents a significant challenge to other competing theories on the lexicon-syntax interface.

Projectionist approaches<sup>3</sup> (see Hale and Keyser [1993], Levin and Rappaport-Havov [1995], Levin and Rappaport-Havov. [2005]), which maintain that the lexical semantics of a verb specifies the hierarchical classification of its arguments, involve strict mapping rules that run contrary to the core desideratum of a conceptual approach that evaluates

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<sup>3</sup>Levin and Rappaport-Havov make an even finer-graded distinction within the camp of constructional approaches to the lexical-syntax interface. Accordingly, they recognize constructional and neoconstructional approaches, with the fundamental differences between these two closely related sub-theories of the same approach being as follows: The traditional constructionists take constructions to be stored linguistic units, while the neoconstructionists view the meaning encoded in syntactic structures as compositionally derived. Traditional constructionist studies pay more careful attention to fine-grained semantic distinctions, while the neoconstructionists tend to stress generalizations which cut across constructions (2005:192).



candidates on the basis of the ranking of violable constraints (such as Soraces ASH). Constructional approaches, which advocate that not the lexical properties of verbs, but rather the syntactic configurations determine the aspectual interpretation of predicates, also falter in the face of an OT-analysis. Although constructionist models predicts more flexibility with regard to lexicon-syntax mapping possibilities; however, such flexibility comes at the cost of overgeneralization. As a result, constraints therefore must be in place at other levels to prevent such overgeneralization [Legendre and Sorace, 2003, 5]. Although an OT-account of complex, violable, mapping algorithms from lexicon to syntax finds itself fundamentally at odds with both projectionist and constructionist approach, Legendre and Sorace [2003, 10] accurately point out that in some areas an OT-approach actually shares some principle desiderata with both: Like the projectionist approach, it assumes a systematic relation between the syntax of auxiliary selection, or in our case between marked and unmarked anticausative forms, and the semantics of individual verbs, like the constructional approach, it allows for verbs (though not all) to have multiple syntactic projections”.

In a similar vein, our approach at first glance shares many similarities with stratal-OT [Kiparsky, 2007]. In a stratal-OT account, the optimal candidate is selected by EVAL in a local competition and serves as the input into the immediately following competition. This variant of an OT-grammar shares many similarities with derivational grammars, especially those that make use of Multiple Spell-Out. Although both our approach and a stratal-OT framework make use of Multiple Spell-Out (not as such), we significantly depart from the latter with regards to our sense of understanding the gradient mapping algorithms involved in regulating the lexicon-syntax interface. Similar to derivational grammars (e.g., MP), in stratal-OT if one step in the derivation is unsatisfied, the derivation crashes. Contrariwise, in our approach such a failure does not shut down the entire grammar; for example, if the interface does not converge at, for instance, *v*, the derivation can still proceed to *Voice*, and onward.

Levin and Rappaport-Havov [1995] first argued for the need to probe unaccusativity diagnostics at a fine-grained level, what they termed ‘surface’ and ‘deep’ unaccusativity. Future work in the hybrid program we propose would attempt to encompass anticausative marking, auxiliary selection, and other unaccusative diagnostics at a fine grained level. The next step in this program would attempt to connect particular root structures to their likelihood to manifest in marked constructions, just as Legendre and Sorace [2003] have done with verb type and auxiliary selection. As studies in Distributed Morphology continue to examine fine-grained interactions between what is often termed ‘world-knowledge’ and the syntax, the Encyclopedia begins to resemble OT approaches such as the Auxiliary Selection Hierarchy. One of the innovations of our hybrid framework is that it is well-situated on conceptual grounds: gradient variation is treated at the interfaces, as part of the distributed Lexicon; Narrow Syntax employs no more than Merge and Move; and lexical factors can be addressed without resort to a distinct module with special generative operations, but rather, as filtering effects over syntactic products. We also move towards

increased groundedness; Merge and Move are grounded within the recursive computational system, thought to be 'perfect', whereas our PF and LF constraints are grounded within the general cognitive niche, thought to be optimal and imposed on the syntax by the demands of language.

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